

FIG. 1

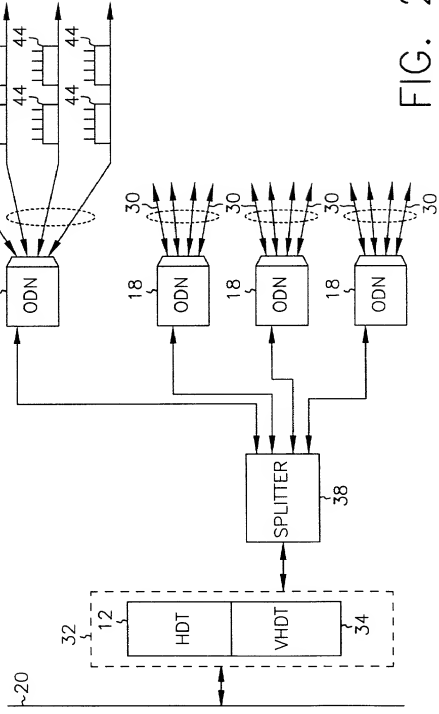


FIG. 2

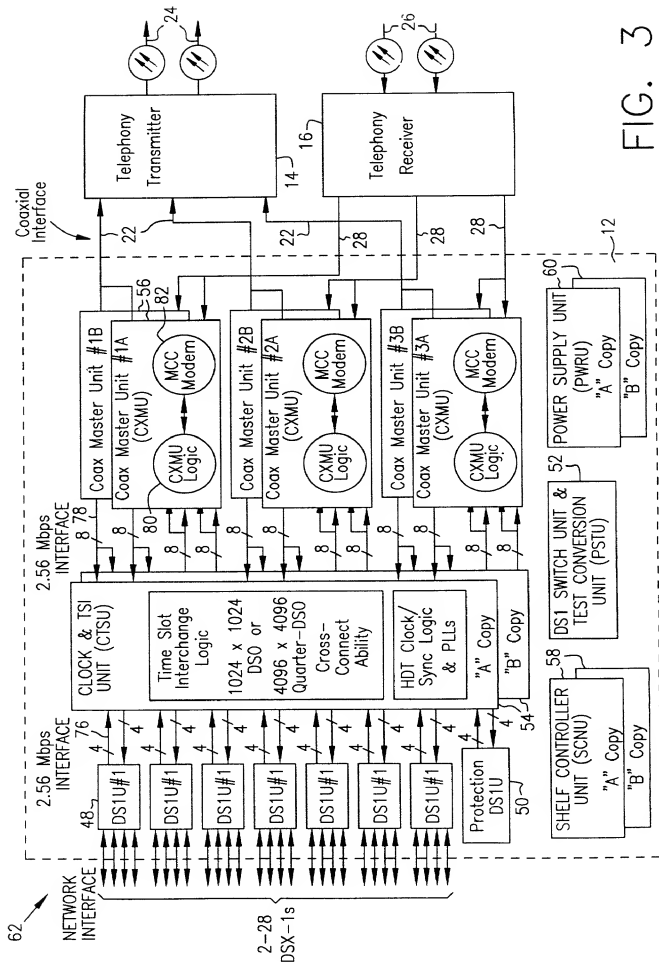


FIG. 3

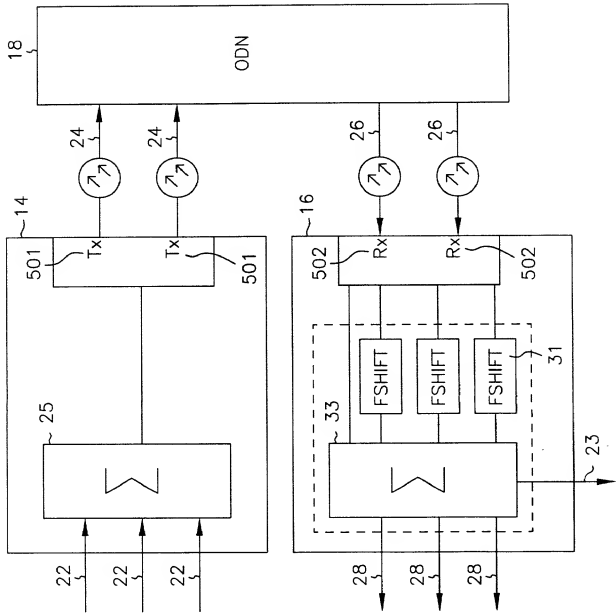


FIG. 4

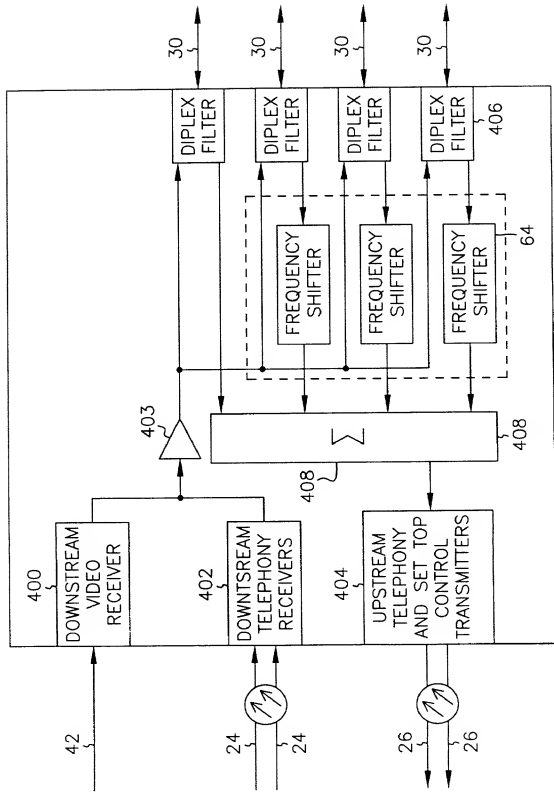


FIG. 5

FIG. 6

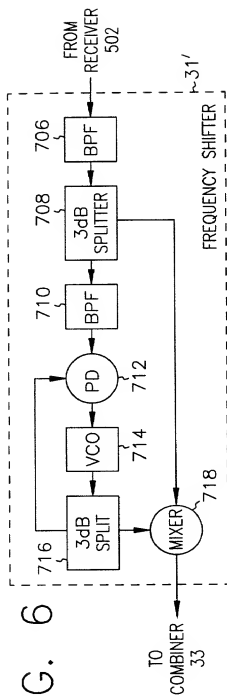
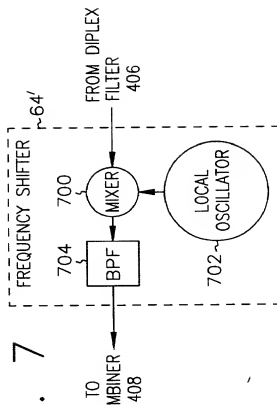


FIG. 7



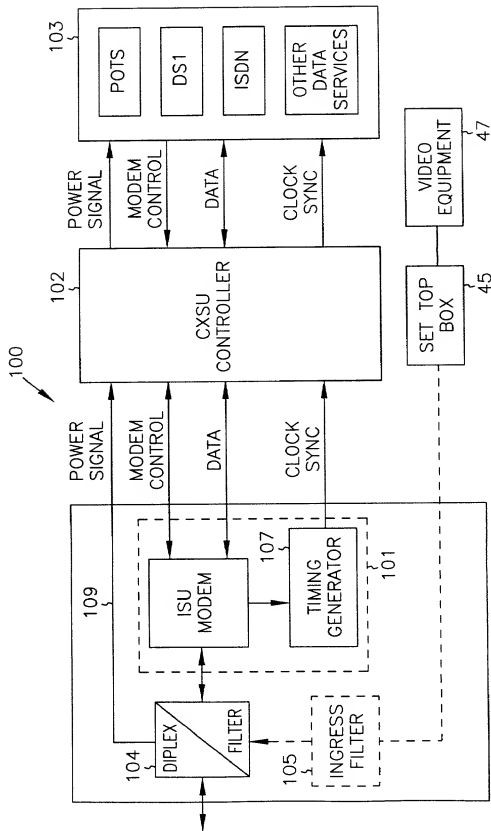


FIG. 8

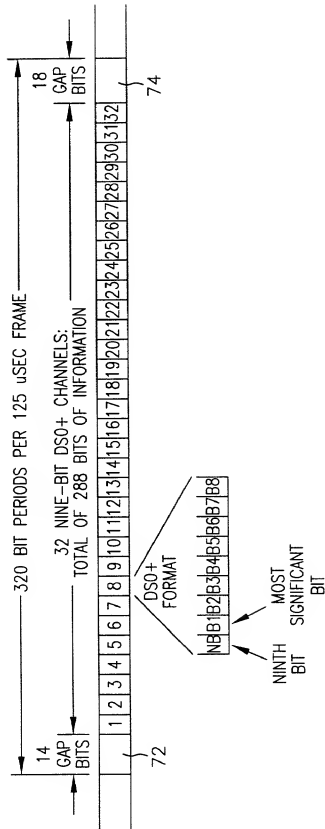


FIG. 9

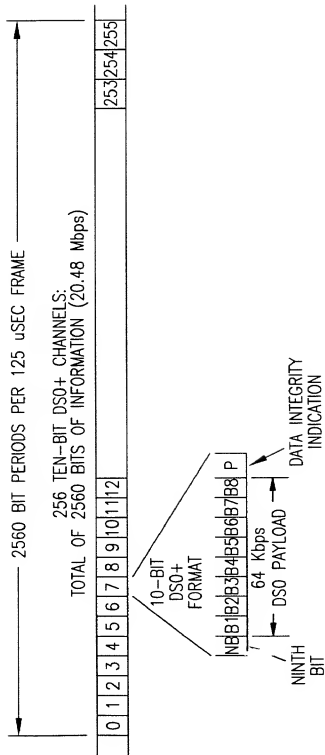


FIG. 10

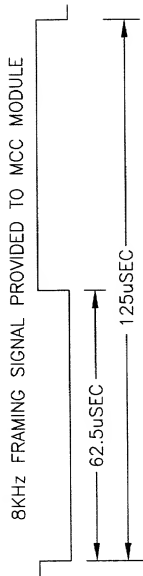


FIG. 11

2025 RELEASE UNDER E.O. 14176

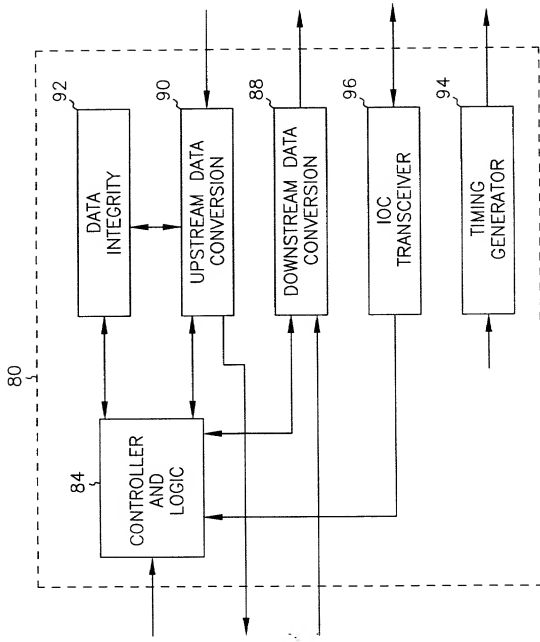


FIG. 12

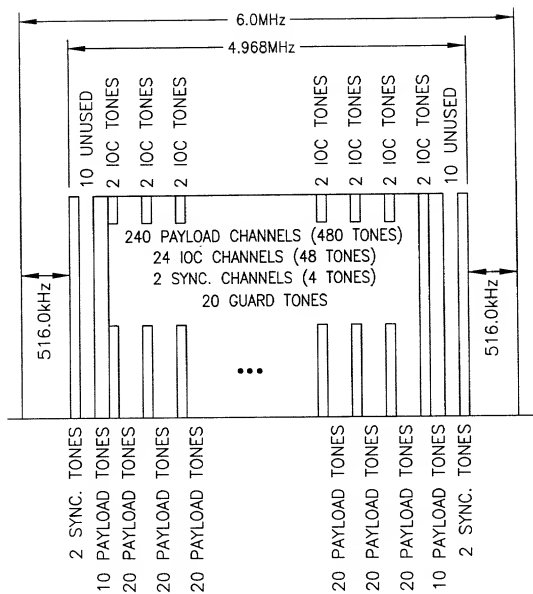


FIG. 13

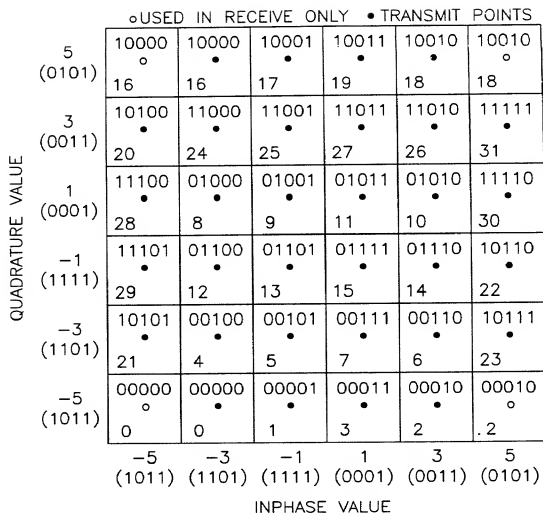


FIG. 14

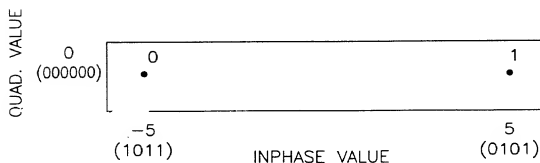


FIG. 15

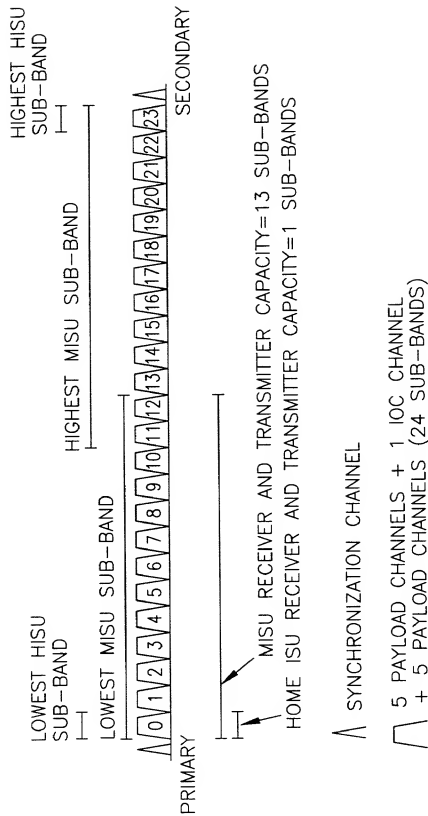


FIG. 16

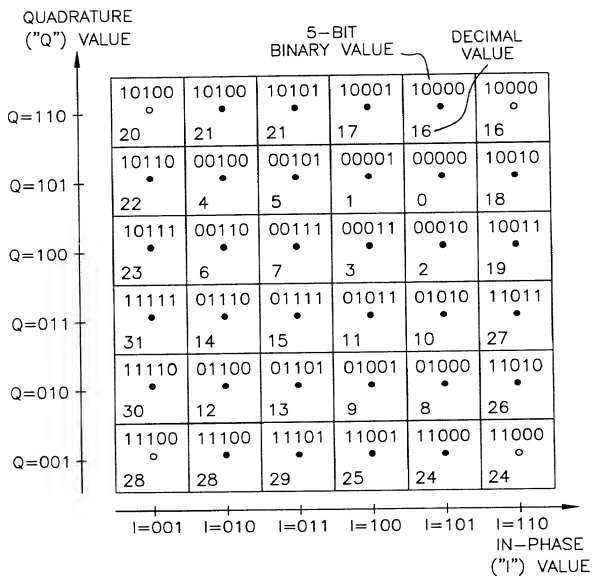


FIG. 17

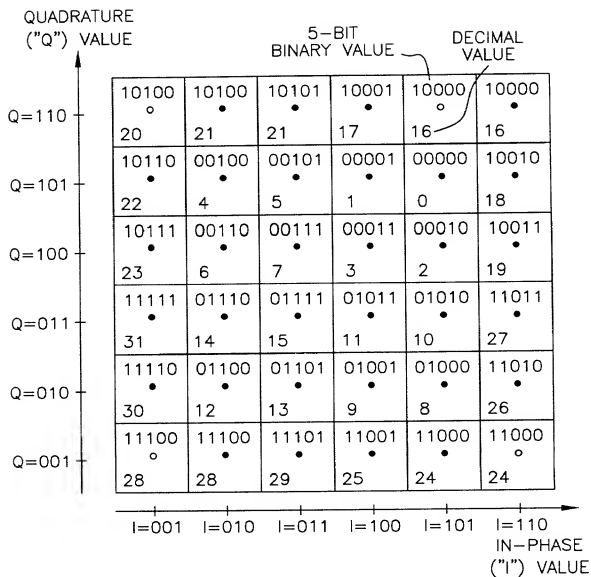


FIG. 18

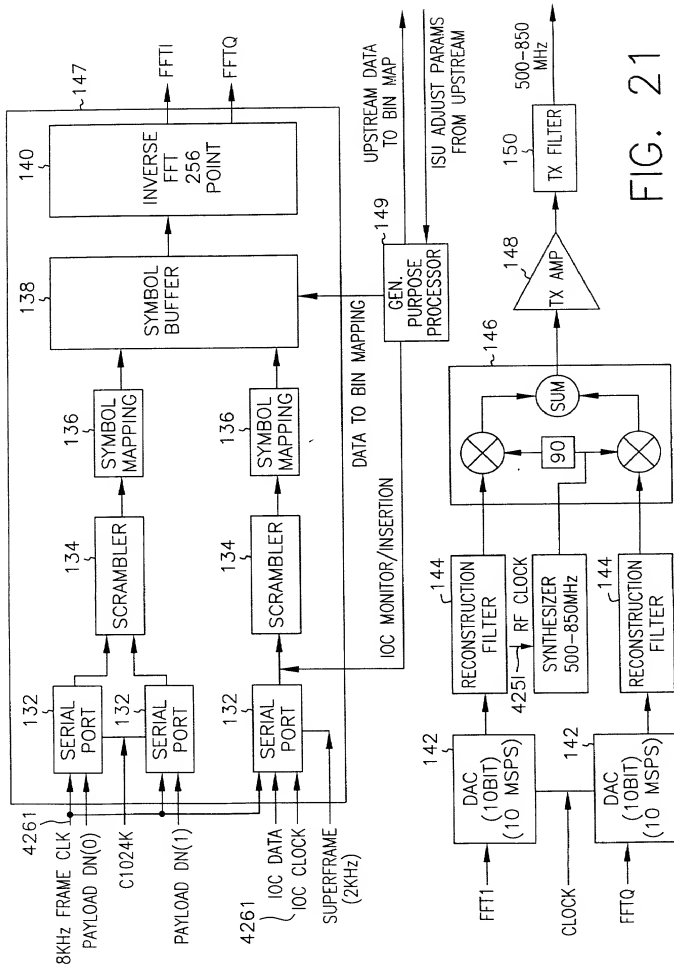


FIG. 21

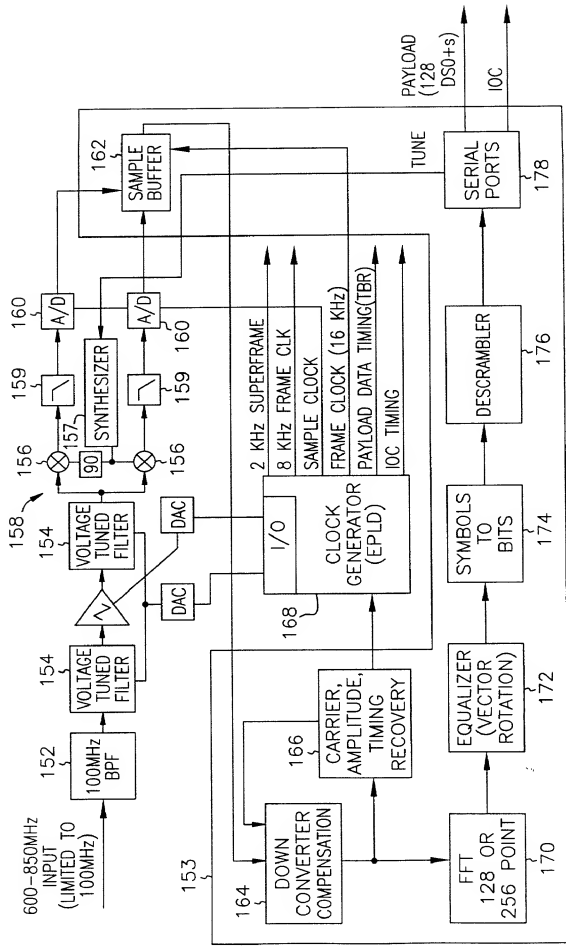


FIG. 22

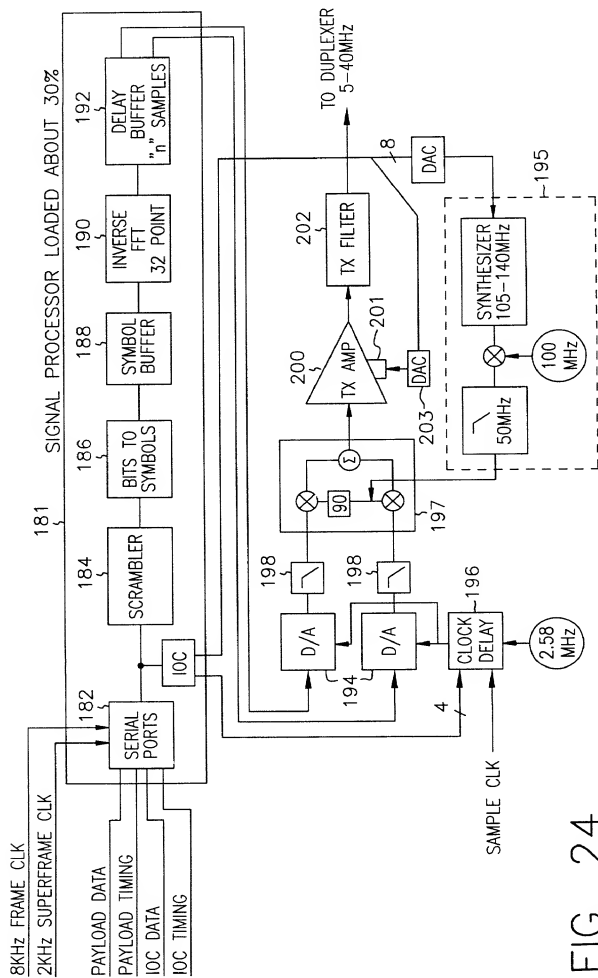


FIG. 24

FIG. 25

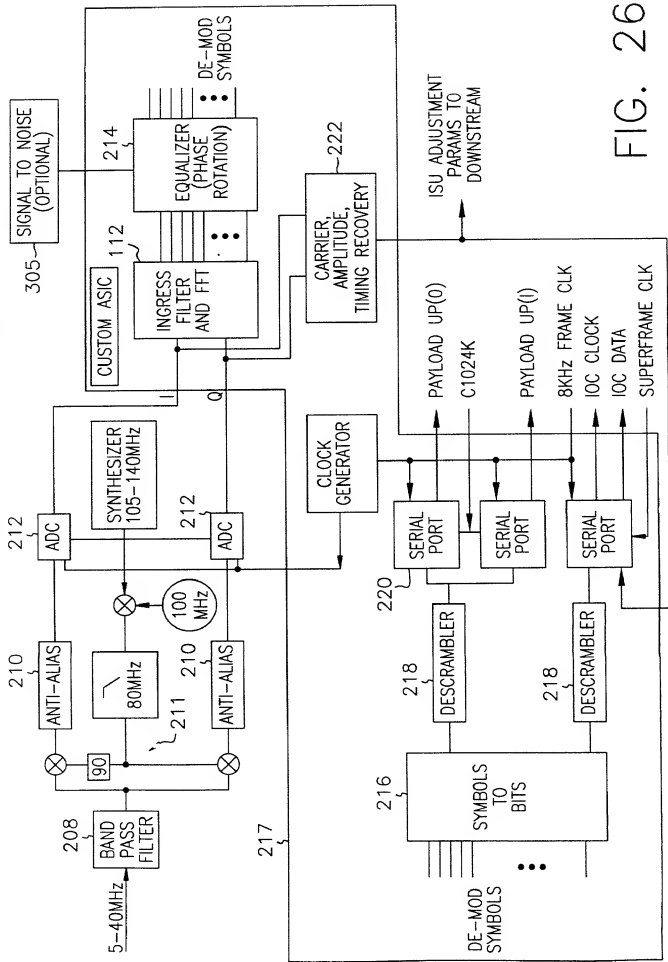


FIG. 26

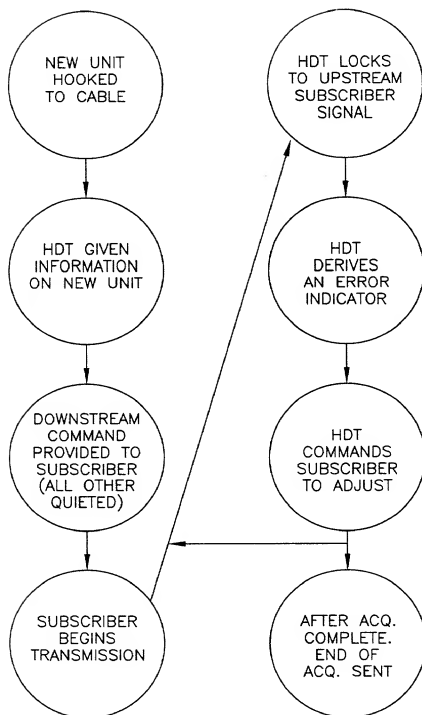


FIG. 27

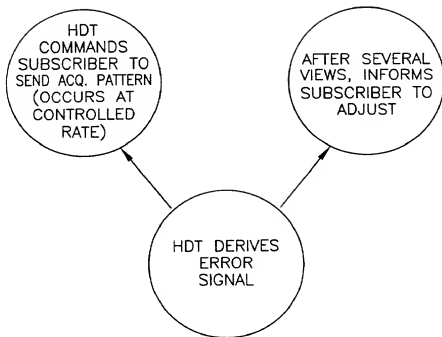


FIG. 28

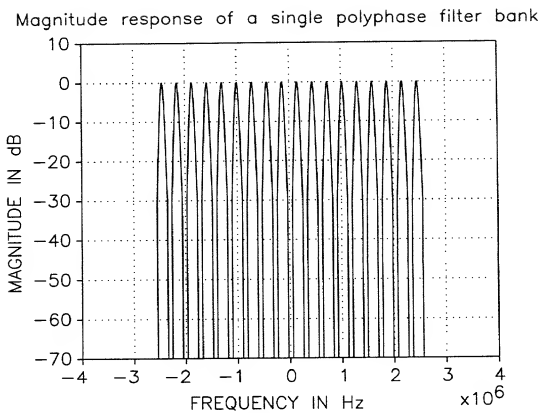


FIG. 29

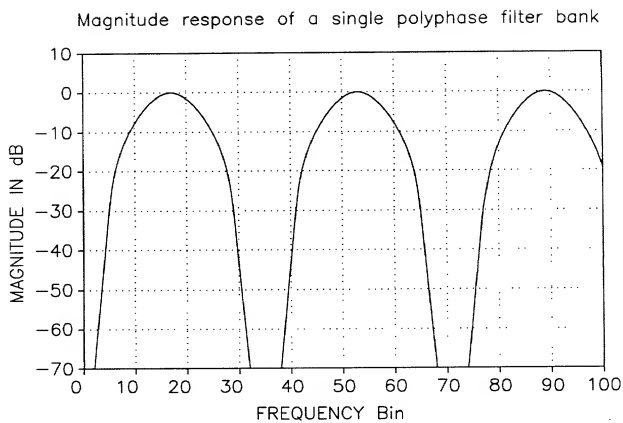


FIG. 30

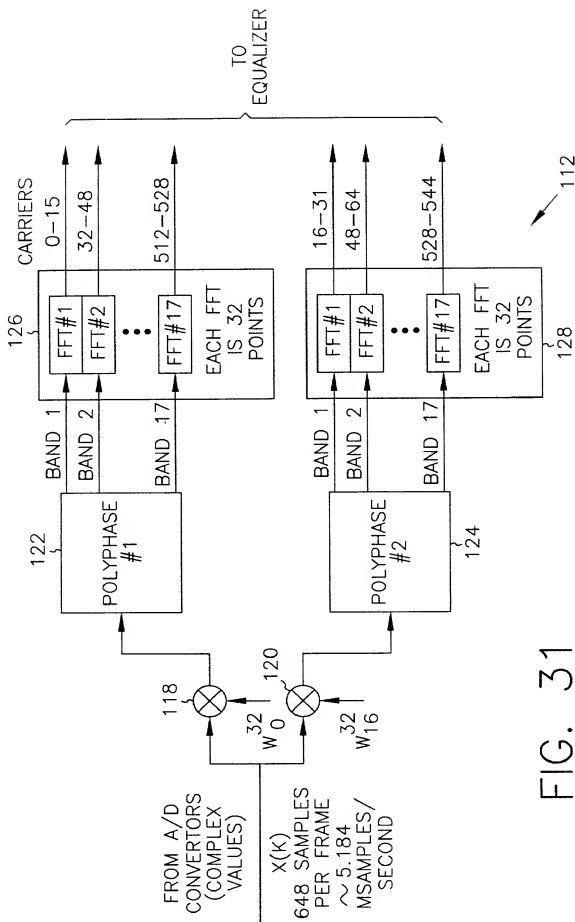


FIG. 31

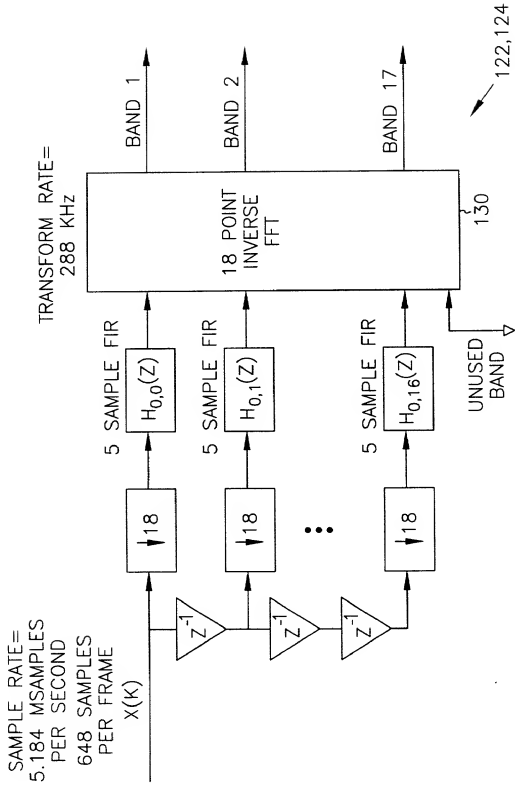
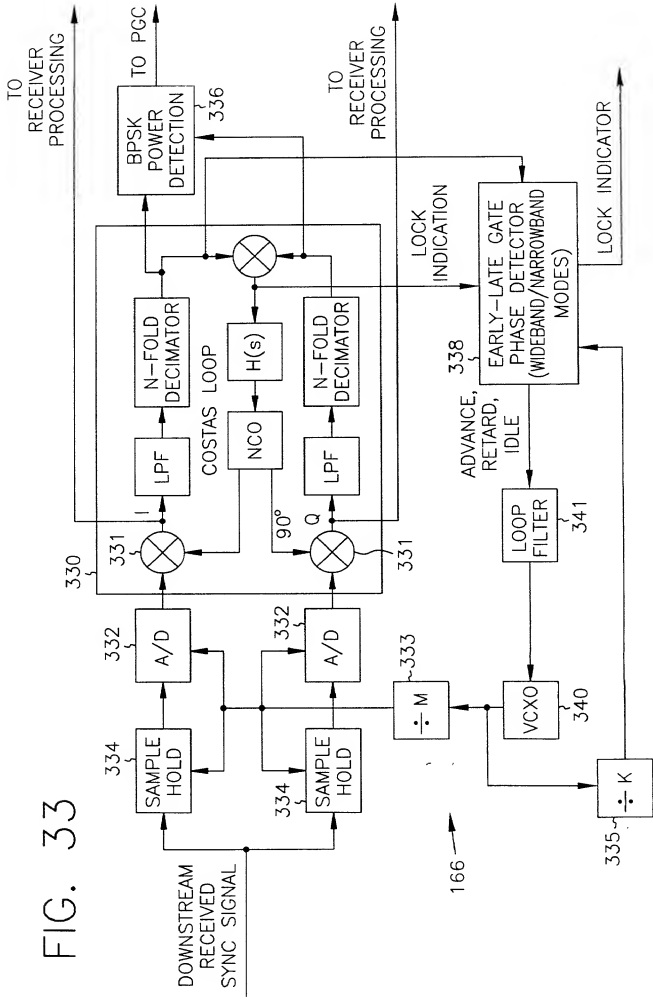


FIG. 32



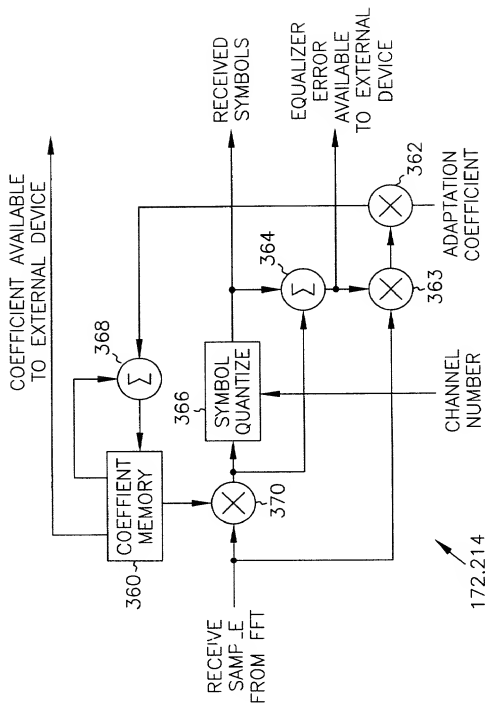


FIG. 35

172,214

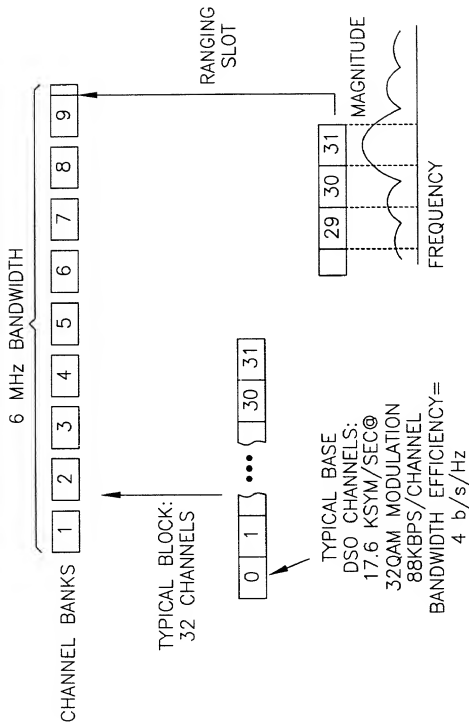


FIG. 36

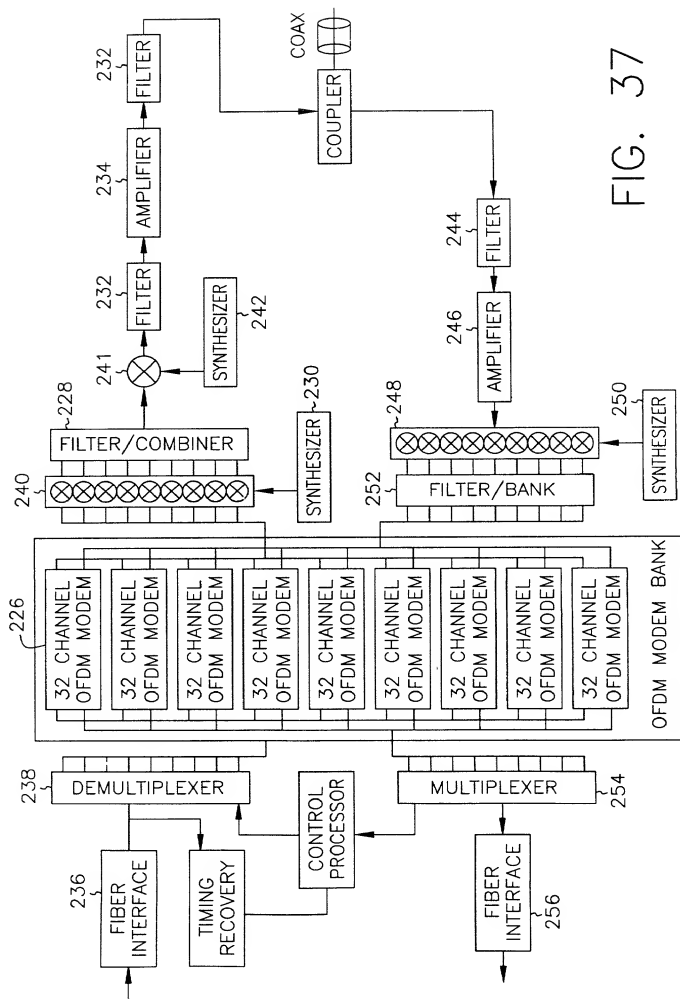


FIG. 37



FIG. 38

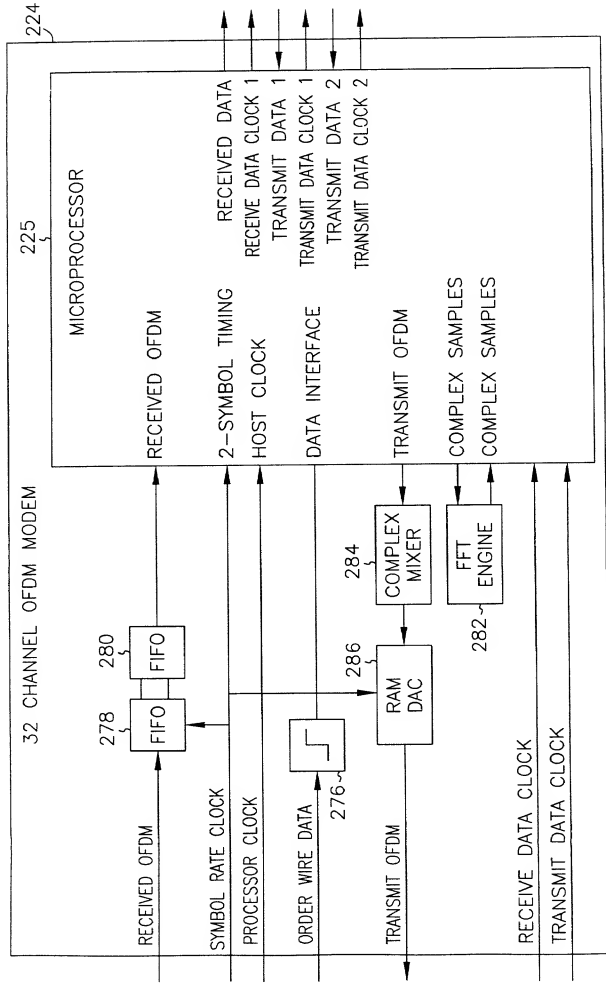


FIG. 39

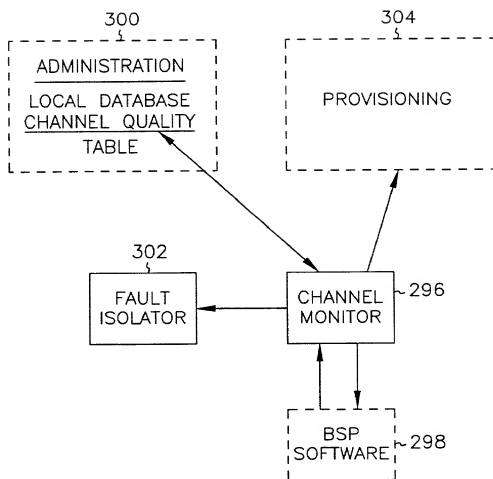


FIG. 40

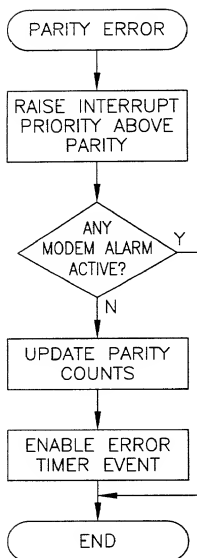


FIG. 41

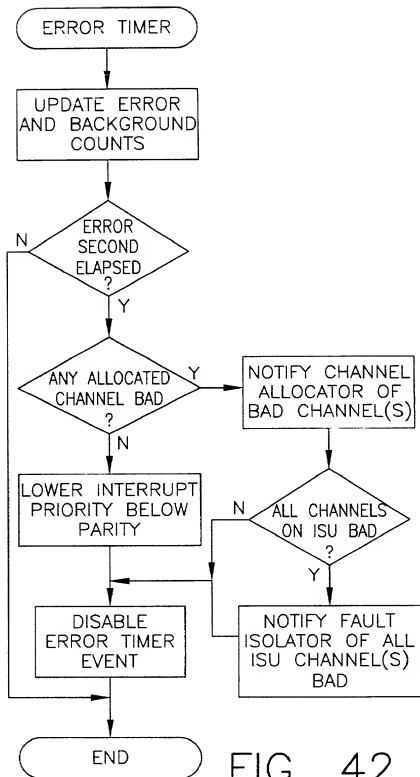


FIG. 42

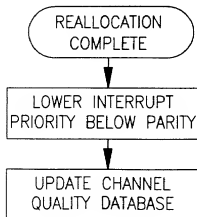
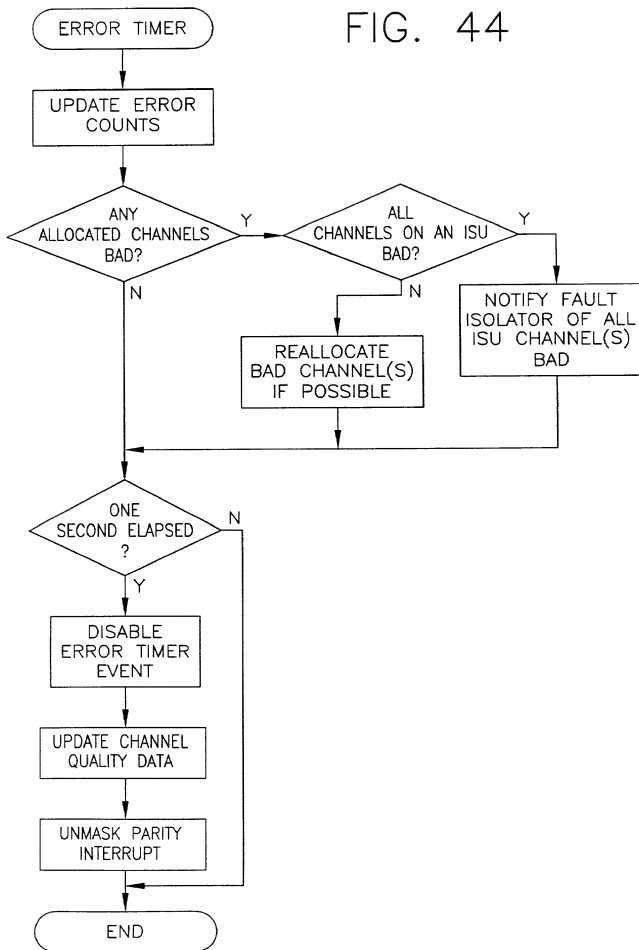


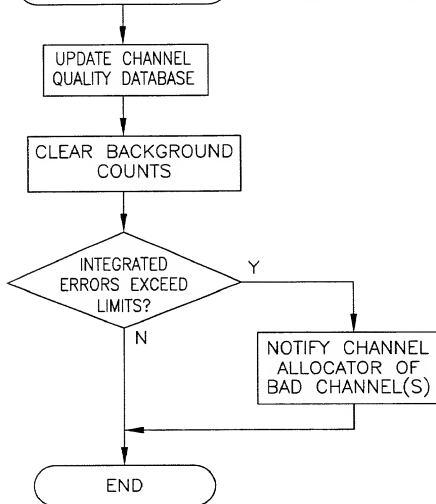
FIG. 43

FIG. 44



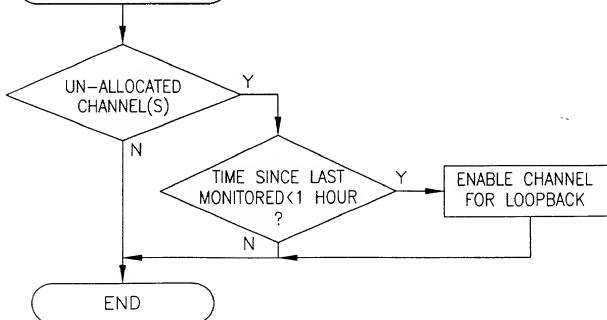
BACKGROUND TIMER

FIG. 45



BACKGROUND TIMER

FIG. 46



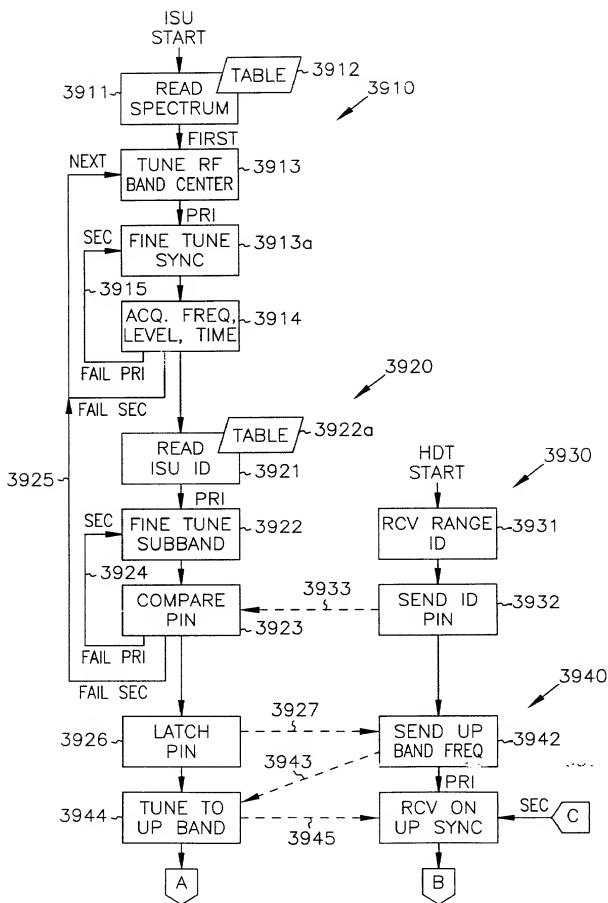
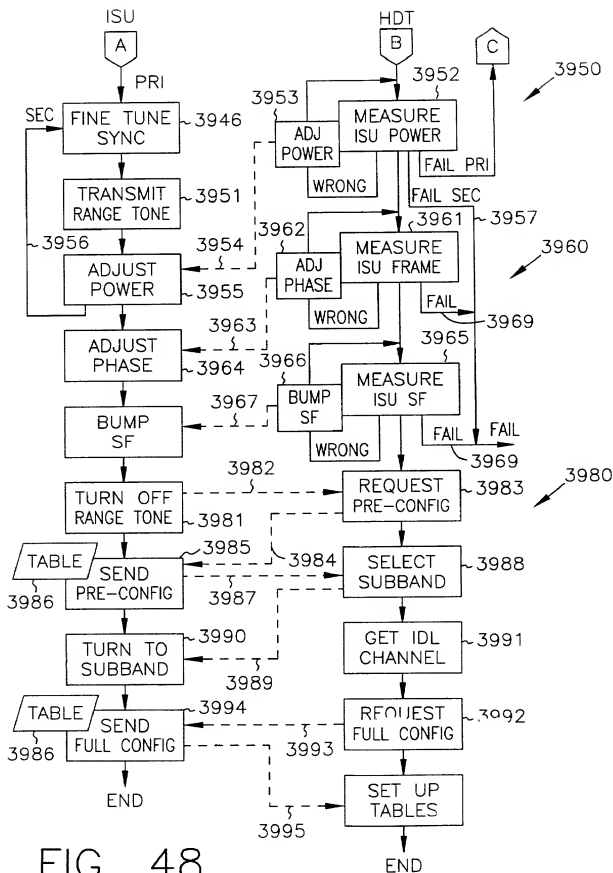


FIG. 47



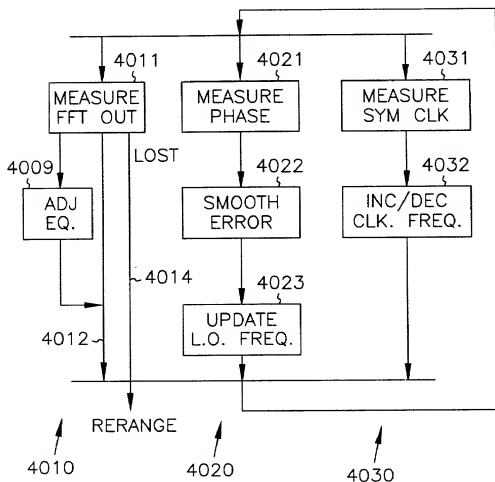


FIG. 49

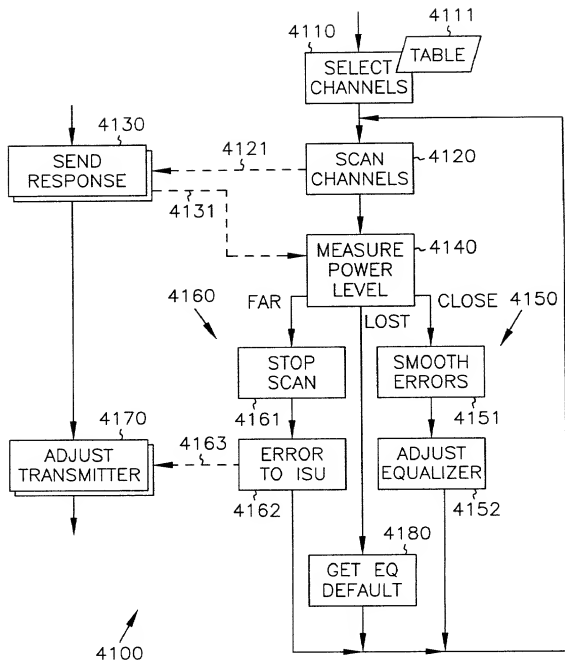


FIG. 50

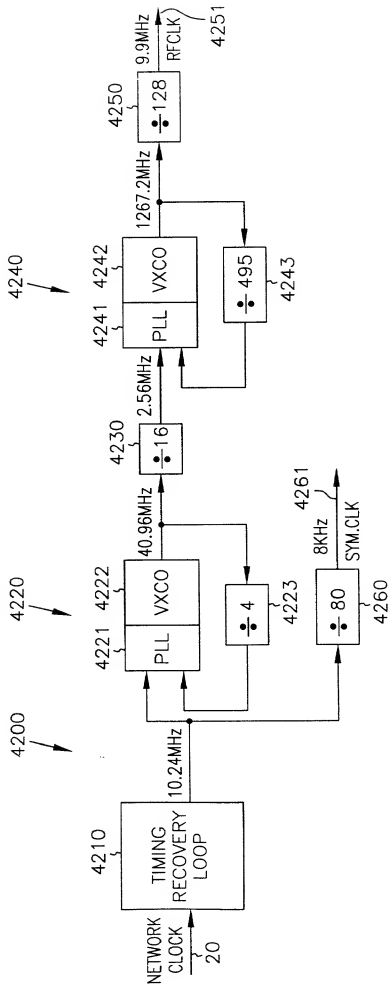


FIG. 51

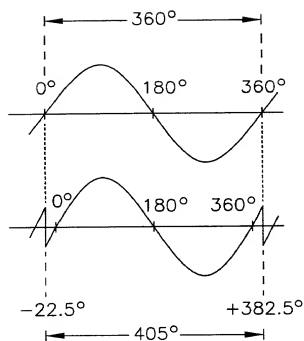


FIG. 52

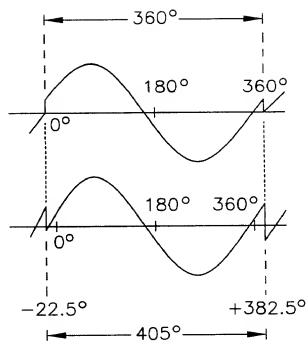


FIG. 53

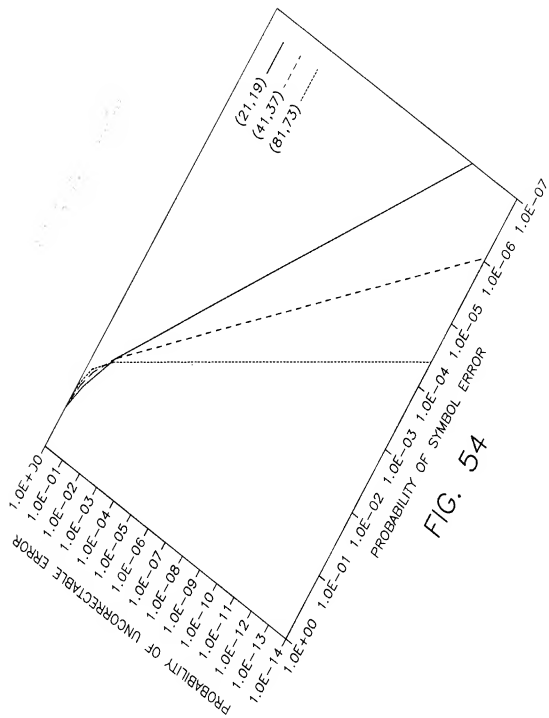


FIG. 54

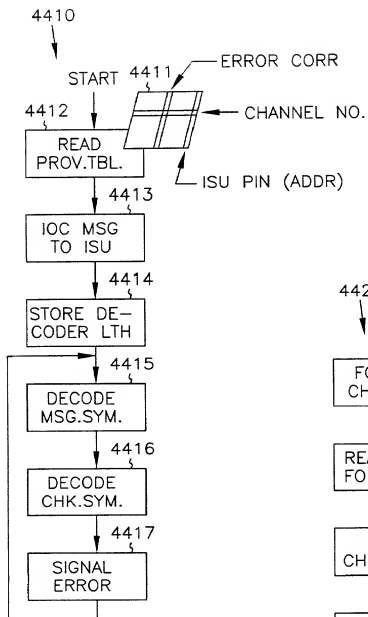


FIG. 55

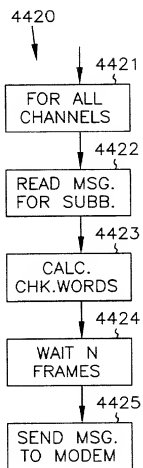


FIG. 56

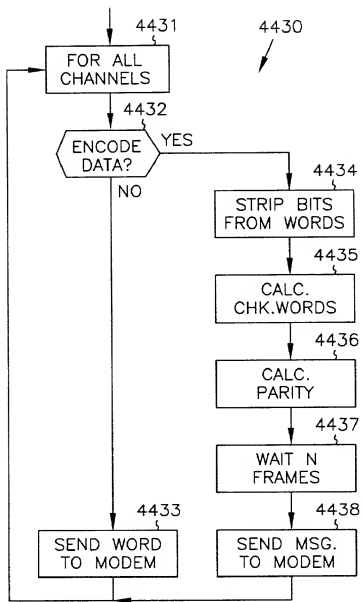


FIG. 57

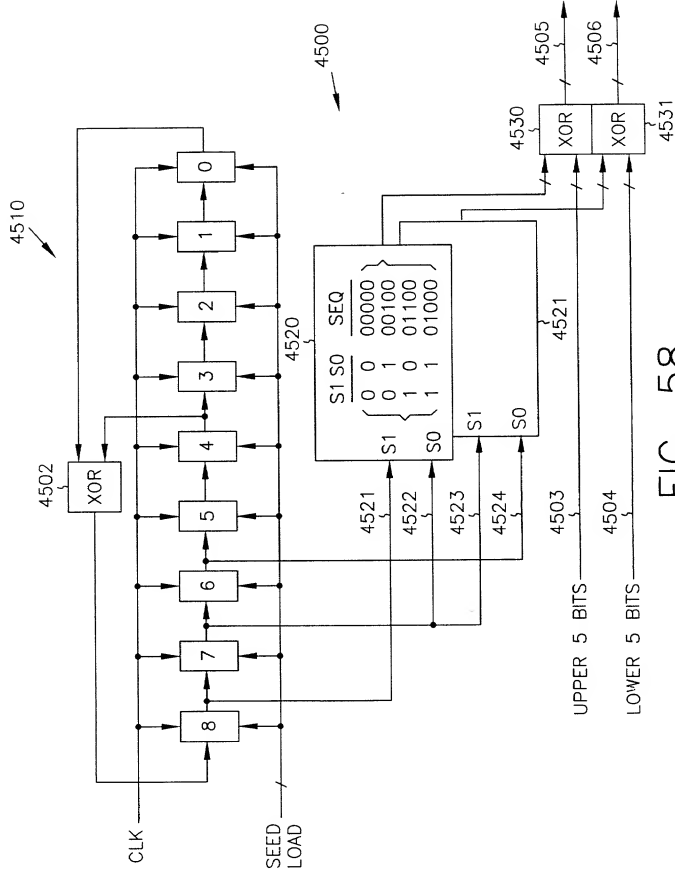


FIG. 58

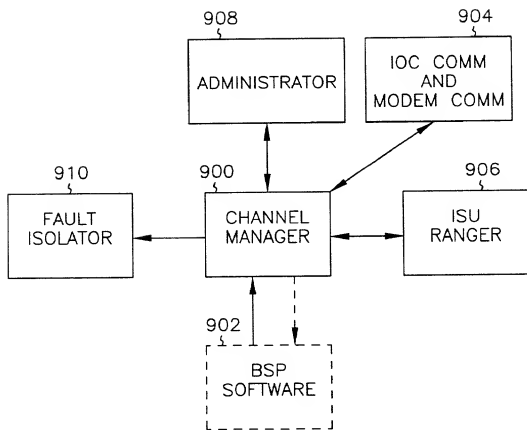


FIG. 59

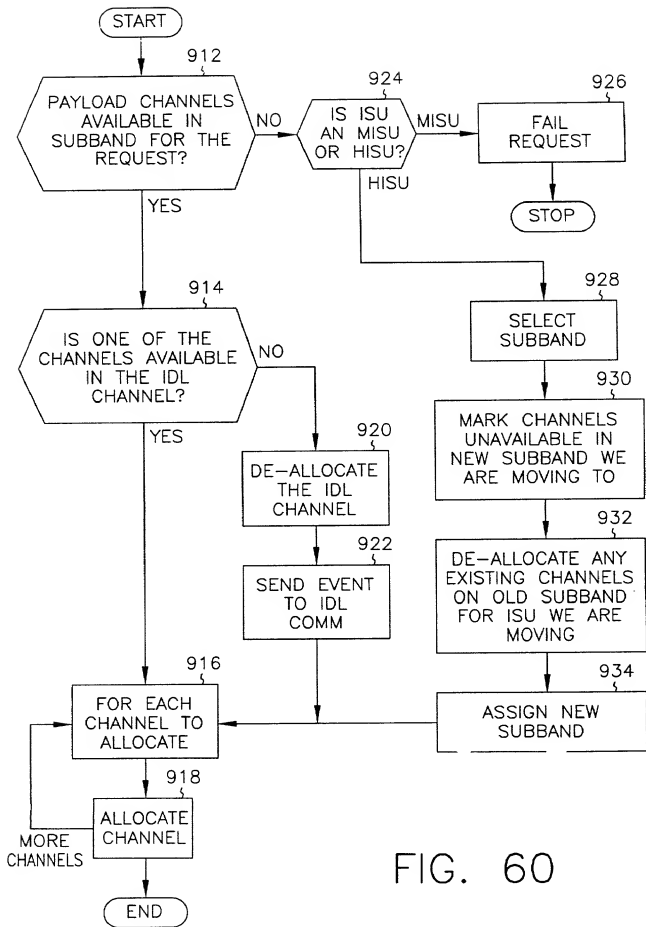


FIG. 60

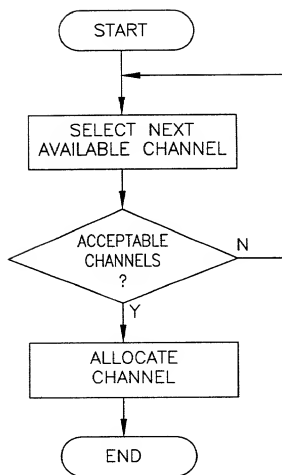


FIG. 61

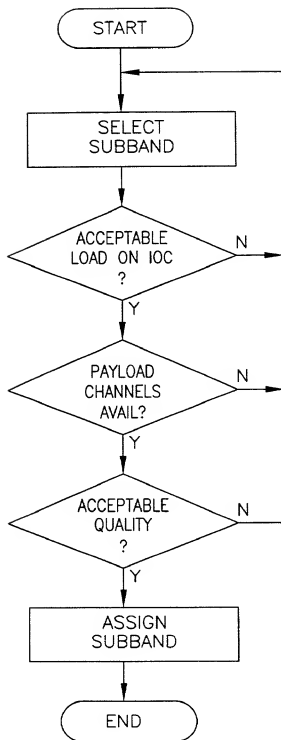


FIG. 62

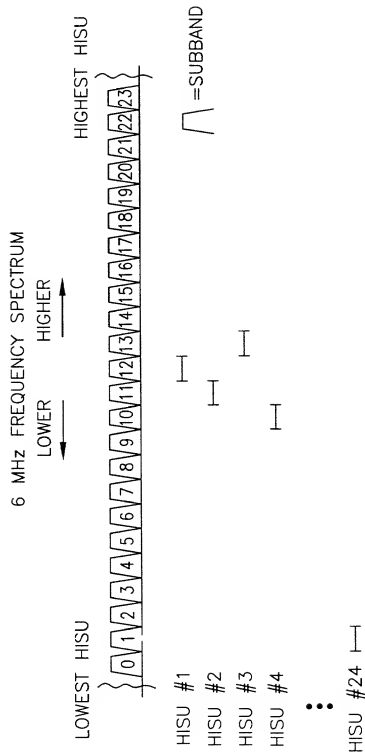
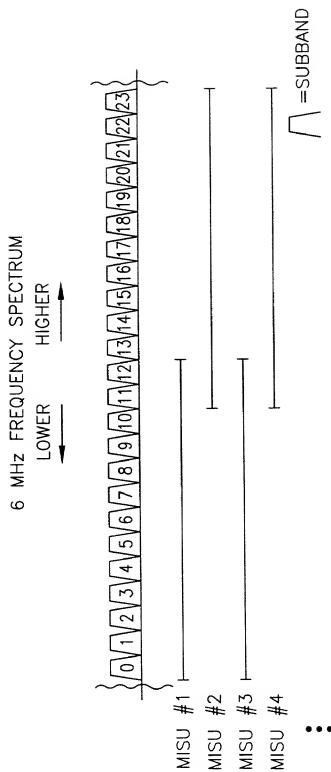


FIG. 63



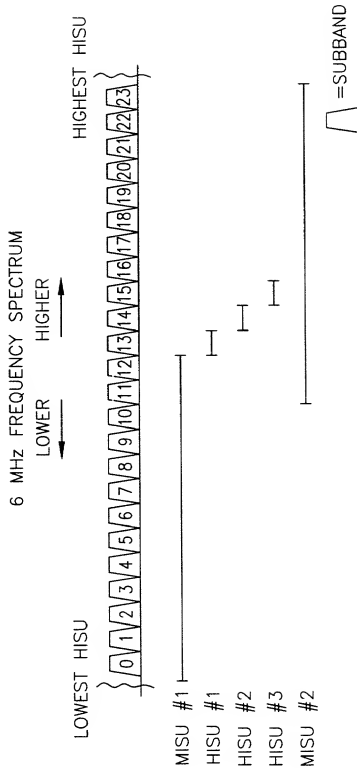


FIG. 65

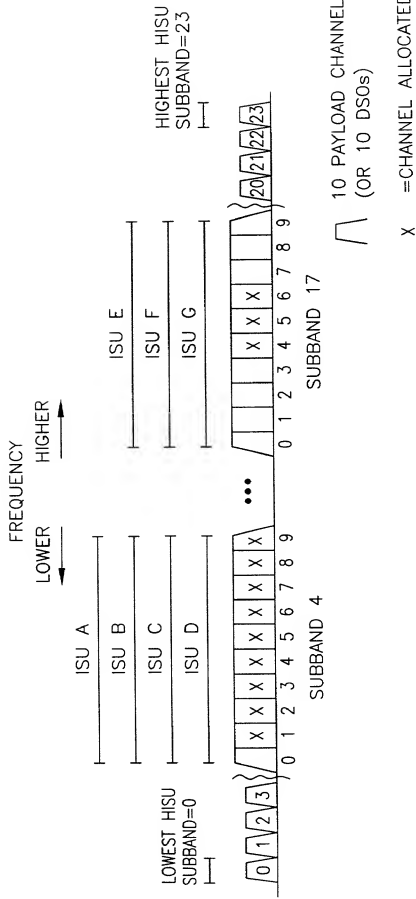


FIG. 66

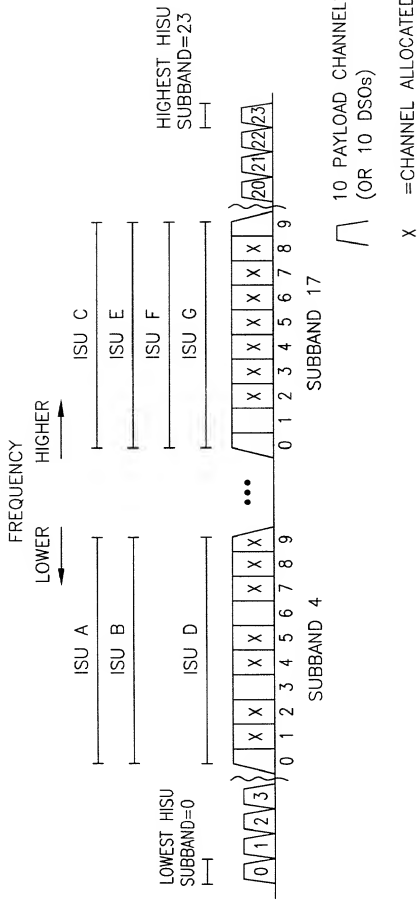


FIG. 67

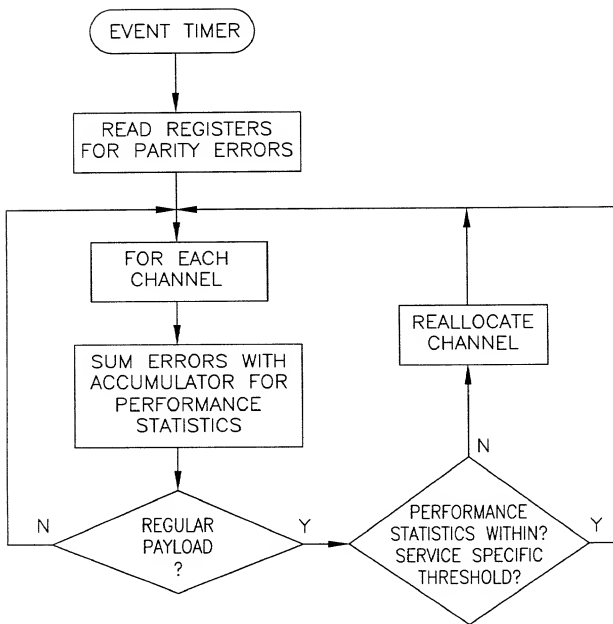


FIG. 68

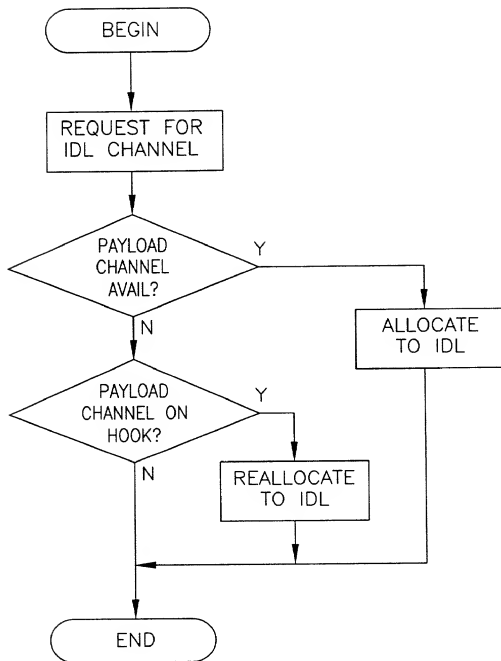


FIG. 69

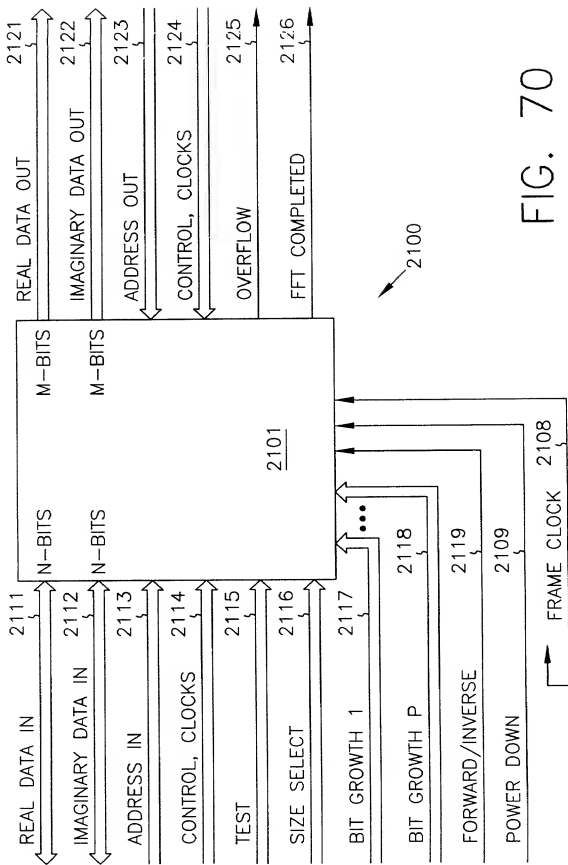


FIG. 70

FIG. 71

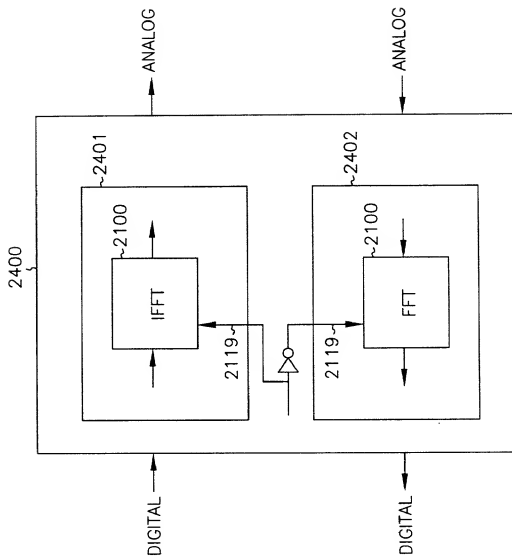


FIG. 71

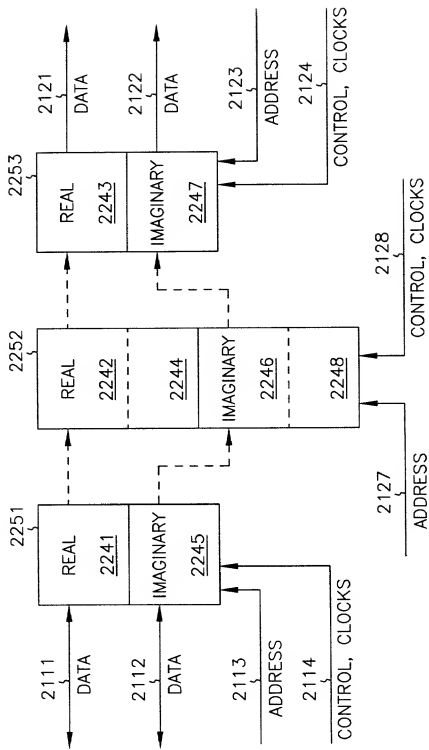


FIG. 72

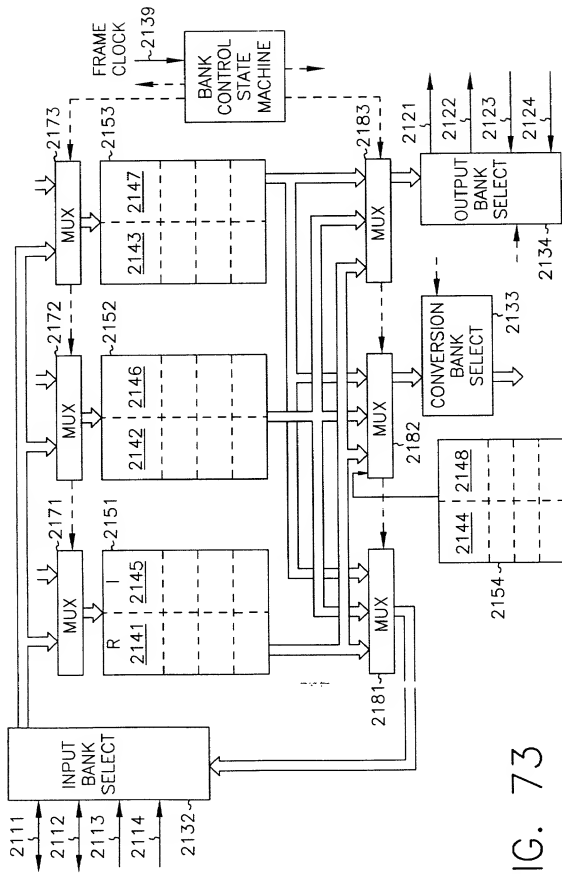
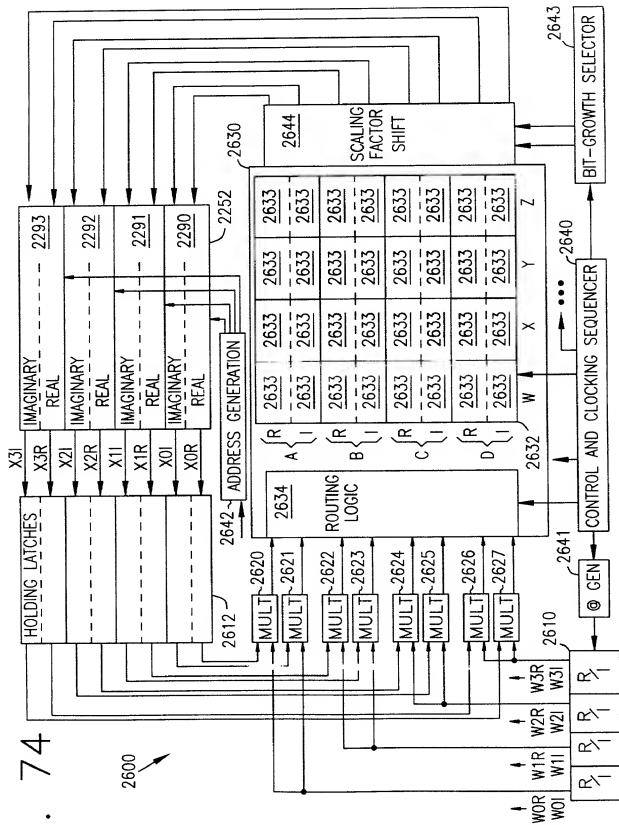


FIG. 73

FIG. 74



THIS TABLE SHOWS THE ORDER OF CALCULATION FOR A TRANSPPOSED BUTTERFLY:

CO

| | | | |
|--|--|--|--|
| $\begin{matrix} \text{AWR}=\text{WR} \\ \text{AWI}=\text{WI} \end{matrix}$ | $\begin{matrix} \text{AXR}=\text{XR} \\ \text{AXI}=\text{XI} \end{matrix}$ | $\begin{matrix} \text{AYR}=\text{YR} \\ \text{AYI}=\text{YI} \end{matrix}$ | $\begin{matrix} \text{AZR}=\text{ZR} \\ \text{AZI}=\text{ZI} \end{matrix}$ |
| $\begin{matrix} \text{BWR}=\text{WR} \\ \text{BWI}=\text{WI} \end{matrix}$ | $\begin{matrix} \text{BXR}=\text{XR} \\ \text{BXI}=\text{XI} \end{matrix}$ | $\begin{matrix} \text{BYR}=\text{YR} \\ \text{BYI}=\text{YI} \end{matrix}$ | $\begin{matrix} \text{BZR}=\text{ZR} \\ \text{BZI}=\text{ZI} \end{matrix}$ |
| $\begin{matrix} \text{CWR}=\text{WR} \\ \text{CWI}=\text{WI} \end{matrix}$ | $\begin{matrix} \text{CXR}=\text{XR} \\ \text{CXI}=\text{XI} \end{matrix}$ | $\begin{matrix} \text{CYR}=\text{YR} \\ \text{CYI}=\text{YI} \end{matrix}$ | $\begin{matrix} \text{CZR}=\text{ZR} \\ \text{CZI}=\text{ZI} \end{matrix}$ |
| $\begin{matrix} \text{DWR}=\text{WR} \\ \text{DWI}=\text{WI} \end{matrix}$ | $\begin{matrix} \text{DXR}=\text{XR} \\ \text{DXI}=\text{XI} \end{matrix}$ | $\begin{matrix} \text{DYR}=\text{YR} \\ \text{DYI}=\text{YI} \end{matrix}$ | $\begin{matrix} \text{DZR}=\text{ZR} \\ \text{DZI}=\text{ZI} \end{matrix}$ |

~2632

2800

FIG. 75

CI

| | | | |
|--|--|--|--|
| $\begin{matrix} \text{AWR}=\text{AWR}-\text{WI} \\ \text{AWI}=\text{AWI}+\text{WR} \end{matrix}$ | $\begin{matrix} \text{AXR}=\text{AXR}-\text{XI} \\ \text{AXI}=\text{AXI}+\text{XR} \end{matrix}$ | $\begin{matrix} \text{AYR}=\text{AYR}-\text{YI} \\ \text{AYI}=\text{AYI}+\text{YR} \end{matrix}$ | $\begin{matrix} \text{AZR}=\text{AZR}-\text{ZI} \\ \text{AZI}=\text{AZI}+\text{ZR} \end{matrix}$ |
| $\begin{matrix} \text{BWR}=\text{BWR}-\text{WI} \\ \text{BWI}=\text{BWI}+\text{WR} \end{matrix}$ | $\begin{matrix} \text{BXR}=\text{BXR}-\text{XI} \\ \text{BXI}=\text{BXI}+\text{XR} \end{matrix}$ | $\begin{matrix} \text{BYR}=\text{BYR}-\text{YI} \\ \text{BYI}=\text{BYI}+\text{YR} \end{matrix}$ | $\begin{matrix} \text{BZR}=\text{BZR}-\text{ZI} \\ \text{BZI}=\text{BZI}+\text{ZR} \end{matrix}$ |
| $\begin{matrix} \text{CWR}=\text{CWR}-\text{WI} \\ \text{CWI}=\text{CWI}+\text{WR} \end{matrix}$ | $\begin{matrix} \text{CXR}=\text{CXR}-\text{XI} \\ \text{CXI}=\text{CXI}+\text{XR} \end{matrix}$ | $\begin{matrix} \text{CYR}=\text{CYR}-\text{YI} \\ \text{CYI}=\text{CYI}+\text{YR} \end{matrix}$ | $\begin{matrix} \text{CZR}=\text{CZR}-\text{ZI} \\ \text{CZI}=\text{CZI}+\text{ZR} \end{matrix}$ |
| $\begin{matrix} \text{DWR}=\text{DWR}-\text{WI} \\ \text{DWI}=\text{DWI}+\text{WR} \end{matrix}$ | $\begin{matrix} \text{DXR}=\text{DXR}-\text{XI} \\ \text{DXI}=\text{DXI}+\text{XR} \end{matrix}$ | $\begin{matrix} \text{DYR}=\text{DYR}-\text{YI} \\ \text{DYI}=\text{DYI}+\text{YR} \end{matrix}$ | $\begin{matrix} \text{DZR}=\text{DZR}-\text{ZI} \\ \text{DZI}=\text{DZI}+\text{ZR} \end{matrix}$ |

~2632

2800

FIG. 76

C2

| | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| AWR=AWR +WR AWI=AWI +WI | AXR=AXR +XI AXI=AXI -XR | AYR=AYR -YR AYI=AYI -YI | AZR=AZR -ZI AZI=AZI +ZR |
| BWR=BWR +WR BWI=BWI +WI | BXR=BXR +XI BXI=BXI -XR | BYR=BYR -YR BYI=BYI -YI | BZR=BZR -ZI BZI=BZI +ZR |
| CWR=CWR +WR CWI=CWI +WI | CXR=CXR +XI CXI=CXI -XR | CYR=CYR -YR CYI=CYI -YI | CZR=CZR -ZI CZI=CZI +ZR |
| DWR=DWR +WR DWI=DWI +WI | DXR=DXR +XI DXI=DXI -XR | DYR=DYR -YR DYI=DYI -YI | DZR=DZR -ZI DZI=DZI +ZR |

2800

FIG. 77

C3

| | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| AWR=AWR -WI AWI=AWI +WR | AXR=AXR +XR AXI=AXI +XI | AYR=AYR +YI AYI=AYI -YR | AZR=AZR -ZR AZI=AZI -ZI |
| BWR=BWR -WI BWI=BWI +WR | BXR=BXR +XR BXI=BXI +XI | BYR=BYR +YI BYI=BYI -YR | BZR=BZR -ZR BZI=BZI -ZI |
| CWR=CWR -WI CWI=CWI +WR | CXR=CXR +XR CXI=CXI +XI | CYR=CYR +YI CYI=CYI -YR | CZR=CZR -ZR CZI=CZI -ZI |
| DWR=DWR -WI DWI=DWI +WR | DXR=DXR +XR DXI=DXI +XI | DYR=DYR +YI DYI=DYI -YR | DZR=DZR -ZR DZI=DZI -ZI |

2800

FIG. 78

C4

| | | | |
|-----------------------------|------------------------------|-----------------------------|-----------------------------|
| AWR=AWR +WR AWI=AWI' +WI | AXR=AXR --XR AXI=AXI' -XI | AYR=AYR +YR AYI=AYI' +YI | AZR=AZR -ZR AZI=AZI' -ZI |
| BWR=BWR +WR BWI=BWI' +WI | BXR=BXR -XR BXI=BXI' -XI | BYR=BYR +YR BYI=BYI' +YI | BZR=BZR -ZR BZI=BZI' -ZI |
| CWR=CWR +WR CWI=CWI' +WI | CXR=CXR -XR CXI=CXI' -XI | CYR=CYR +YR CYI=CYI' +YI | CZR=CZR -ZR CZI=CZI' -ZI |
| DWR=DWR +WR DWI=DWI' +WI | DXR=DXR -XR DXI=DXI' -XI | DYR=DYR +YR DYI=DYI' +YI | DZR=DZR -ZR DZI=DZI' -ZI |

2800

FIG. 79

C5

| | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| AWR=AWR -WI AWI=AWI' +WR | AXR=AXR +XI AXI=AXI' -XR | AYR=AYR -YI AYI=AYI' +YR | AZR=AZR +ZI AZI=AZI' -ZR |
| BWR=BWR -WI BWI=BWI' +WR | BXR=BXR +XI BXI=BXI' -XR | BYR=BYR -YI BYI=BYI' +YR | BZR=BZR +ZI BZI=BZI' -ZR |
| CWR=CWR -WI CWI=CWI' +WR | CXR=CXR +XI CXI=CXI' -XR | CYR=CYR -YI CYI=CYI' +YR | CZR=CZR +ZI CZI=CZI' -ZR |
| DWR=DWR -WI DWI=DWI' +WR | DXR=DXR +XI DXI=DXI' -XR | DYR=DYR -YI DYI=DYI' +YR | DZR=DZR +ZI DZI=DZI' -ZR |

2800

FIG. 80

C6

| | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| AWR=AWR +WR AWI=AWI +WI | AXR=AXR -XI AXI=AXI +XR | AYR=AYR -YR AYI=AYI -YI | AZR=AZR +ZI AZI=AZI -ZR |
| BWR=BWR +WR BWI=BWI +WI | BXR=BXR -XI BXI=BXI +XR | BYR=BYR -YR BYI=BYI -YI | BZR=BZR +ZI BZI=BZI -ZR |
| CWR=CWR +WR CWI=CWI +WI | CXR=CXR -XI CXI=CXI +XR | CYR=CYR -YR CYI=CYI -YI | CZR=CZR +ZI CZI=CZI -ZR |
| DWR=DWR +WR DWI=DWI +WI | DXR=DXR -XI DXI=DXI +XR | DYR=DYR -YR DYI=DYI -YI | DZR=DZR +ZI DZI=DZI -ZR |

~2632

2800

FIG. 81

C7

| | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| AWR=AWR -WI AWI=AWI +WI | AXR=AXR -XR AXI=AXI -XI | AYR=AYR +YI AYI=AYI -YR | AZR=AZR -ZR AZI=AZI +ZI |
| BWR=BWR -WI BWI=BWI +WI | BXR=BXR -XR BXI=BXI -XI | BYR=BYR +YI BYI=BYI -YR | BZR=BZR -ZR BZI=BZI +ZI |
| CWR=CWR -WI CWI=CWI +WI | CXR=CXR -XR CXI=CXI -XI | CYR=CYR +YI CYI=CYI -YR | CZR=CZR -ZR CZI=CZI +ZI |
| DWR=DWR -WI DWI=DWI +WI | DXR=DXR -XR DXI=DXI -XI | DYR=DYR +YI DYI=DYI -YR | DZR=DZR -ZR DZI=DZI +ZI |

~2632

2800

FIG. 82

THIS TABLE SHOWS THE ORDER OF CALCULATION FOR A TRANSPOSED BUTTERFLY:

2632

| AWR = WR+XR+YR+ZR AWI = WI+XI+YI+ZI | AXR = WR-XI-YR+ZI AXI = WI+XR-YI-ZR | AYR = WR-XR+YR-ZR AYI = WI-XI+YI-ZI | AZR = WR+XI-YR-ZI AZI = WI-XR-YI+ZR |
|--|--|--|--|
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

2810

FIG. 83

2632

| AWR = AWR-(WI+XI+YI+ZI) AWI = AWI+(WR+XR+YR+ZR) | AXR = AXR-(WI+XR-YI-ZR) AXI = AXI+(WR-XI-YR+ZI) | AYR = AYR-(WI-XI+YI-ZI) AYI = AYI+(WR-XR+YR-ZR) | AZR = AZR-(WI-XR-YI+ZR) AZI = AZI+(WR+XI-YR-ZI) |
|--|--|--|--|
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

2810

FIG. 84

| | | | | | |
|----|--|--|--|--|------|
| C2 | 2632 | | | | 2810 |
| | - | - | - | - | |
| | - | - | - | - | |
| | $BWR = WR + XR + YR + ZR$ $BWI = WI + XI + YI + ZI$ | $BXR = WR - XI - YR + ZI$ $BXI = WI + XR - YI - ZR$ | $BYR = WR - XR + YR - ZR$ $BYI = WI - XI + YI - ZI$ | $BZR = WR + XI - YR - ZI$ $BZI = WI - XR - YI + ZR$ | |
| | - | - | - | - | |
| | - | - | - | - | |

FIG. 85

| | | | | | |
|----|--|--|--|--|------|
| C3 | 2632 | | | | 2810 |
| | - | - | - | - | |
| | - | - | - | - | |
| | $BWR = BWR - (WI + XI + YI + ZI)$ $BWI = BWI + (WR + XR + YR + ZR)$ | $BXR = BXR - (WI + XR - YI - ZR)$ $BXI = BXI + (WR - XI - YR + ZI)$ | $BYR = BYR - (WI - XI + YI - ZI)$ $BYI = BYI + (WR - XR + YR - ZR)$ | $BZR = BZR - (WI - XR - YI + ZR)$ $BZI = BZI + (WR + XI - YR - ZI)$ | |
| | - | - | - | - | |
| | - | - | - | - | |

FIG. 86

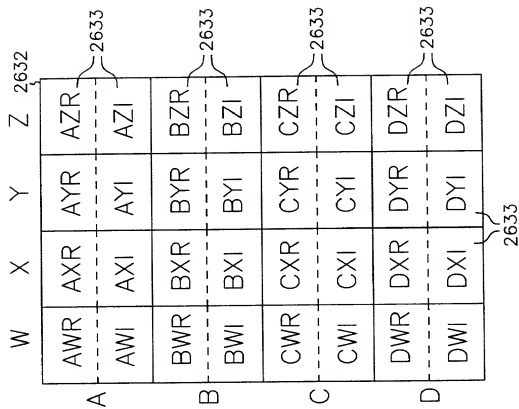
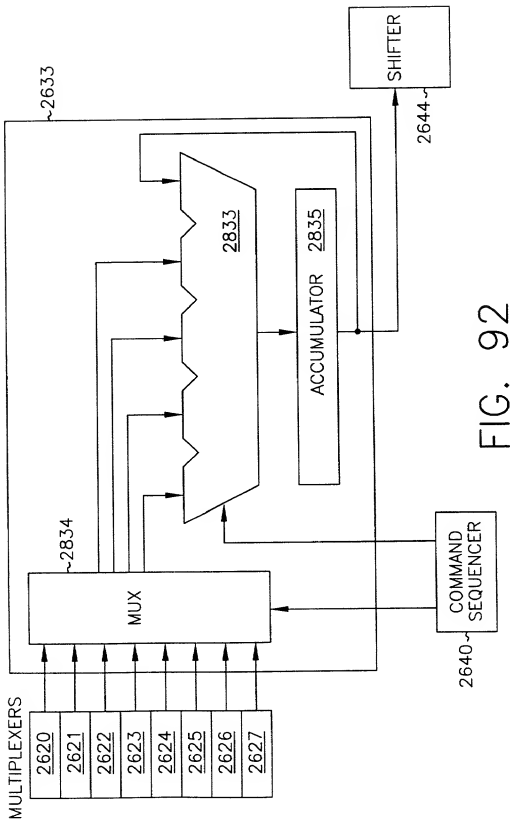


FIG. 91



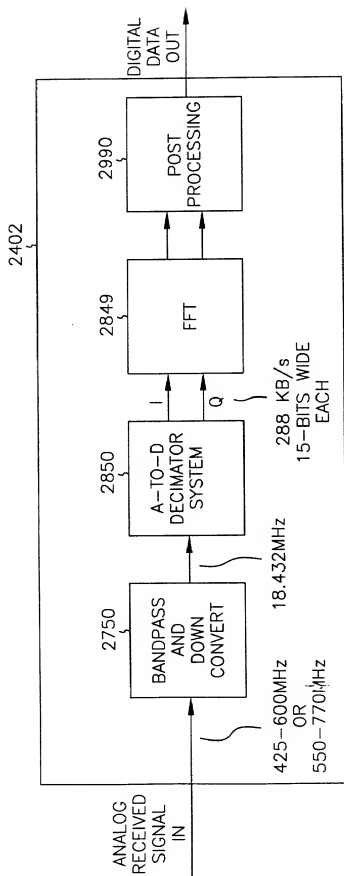


FIG. 93

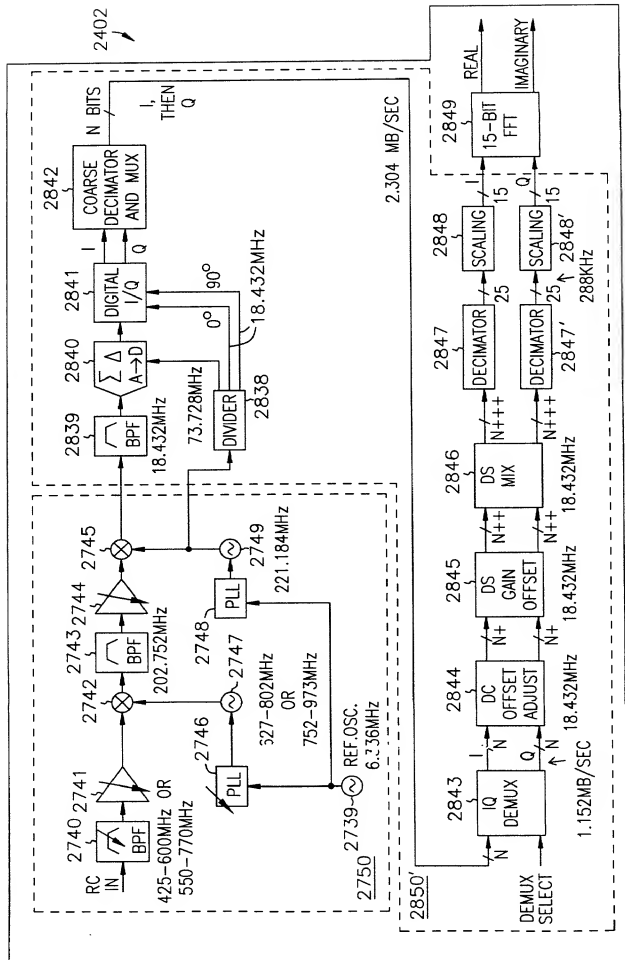


FIG. 94

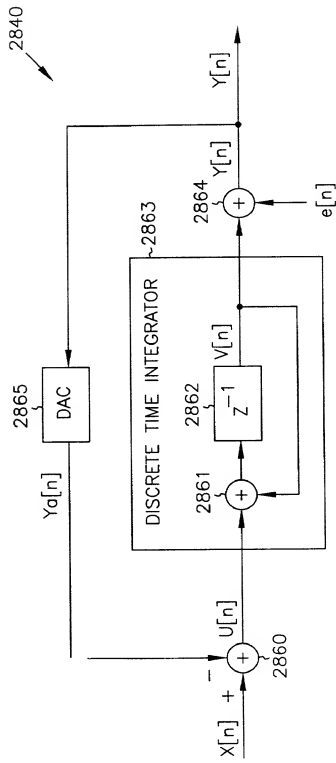
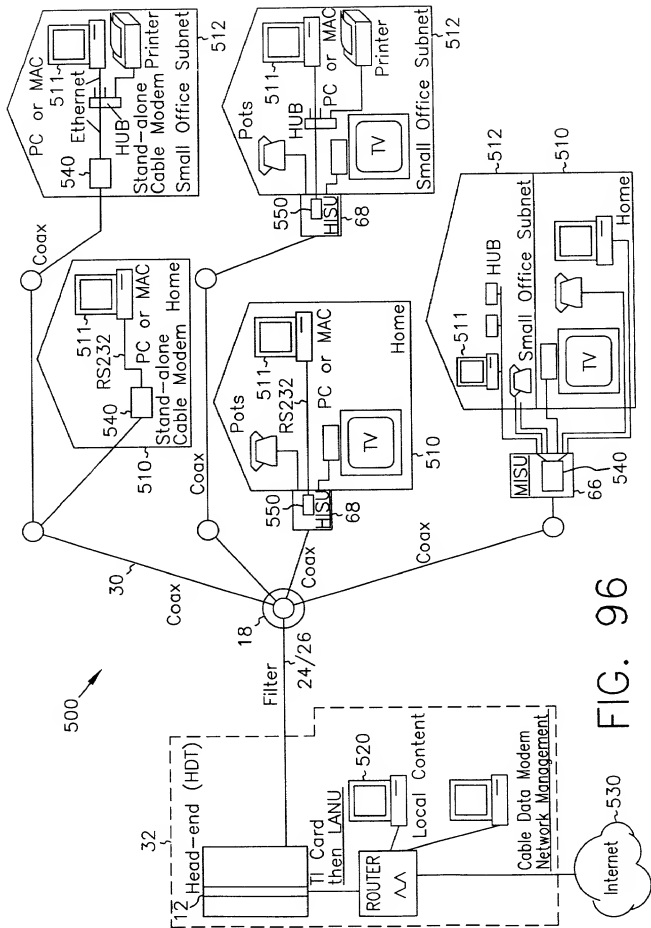


FIG. 95



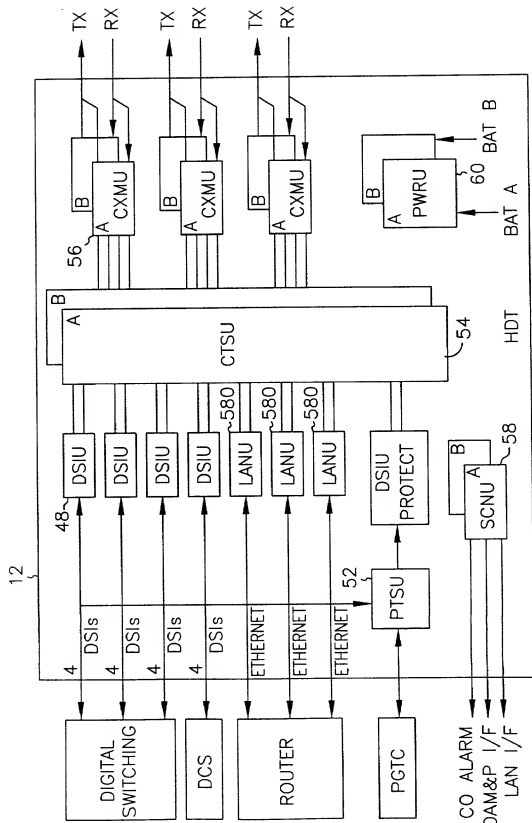


FIG. 97

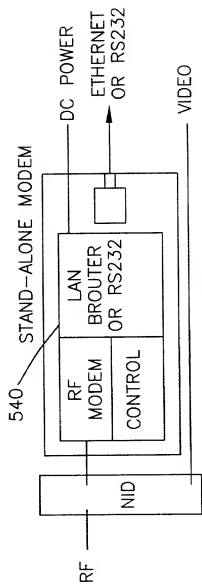
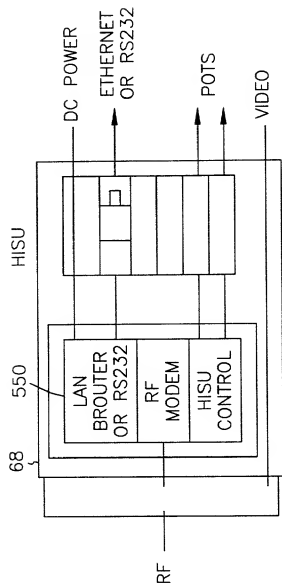


FIG. 98

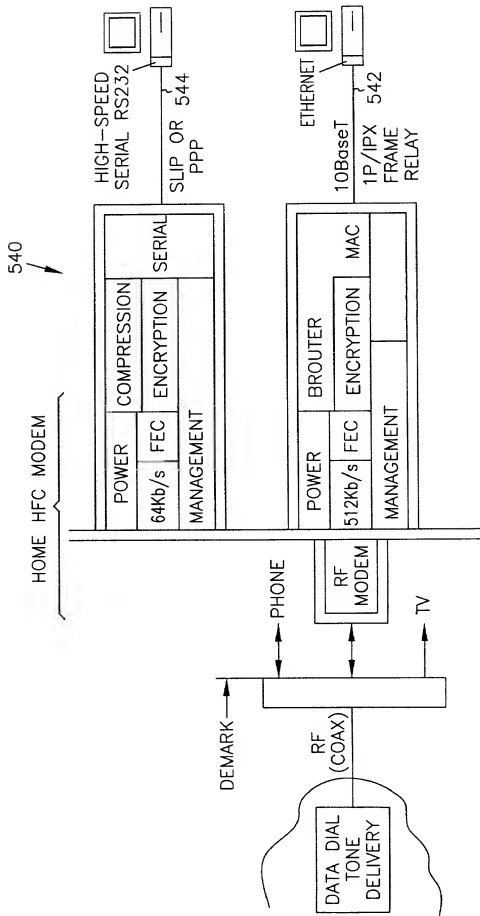


FIG. 99

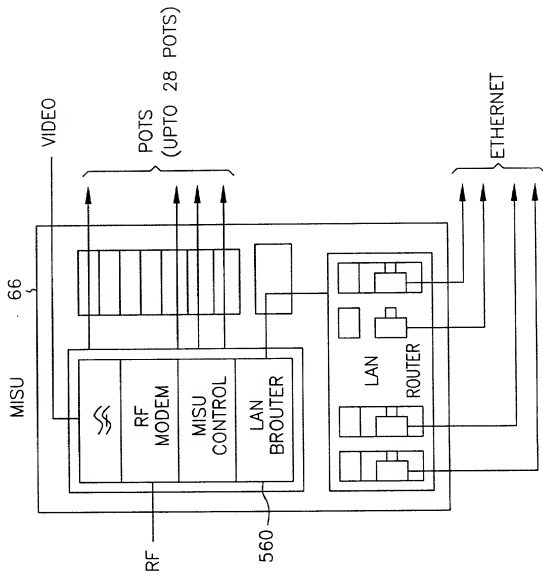


FIG. 100

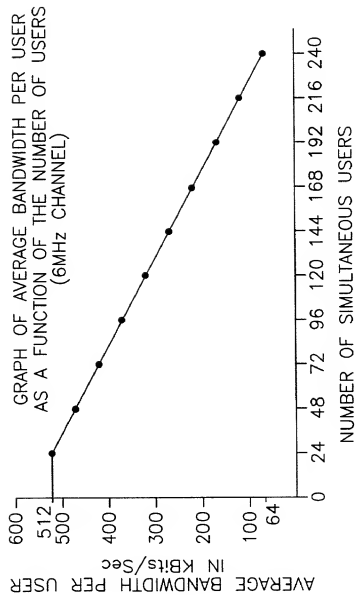


FIG. 101

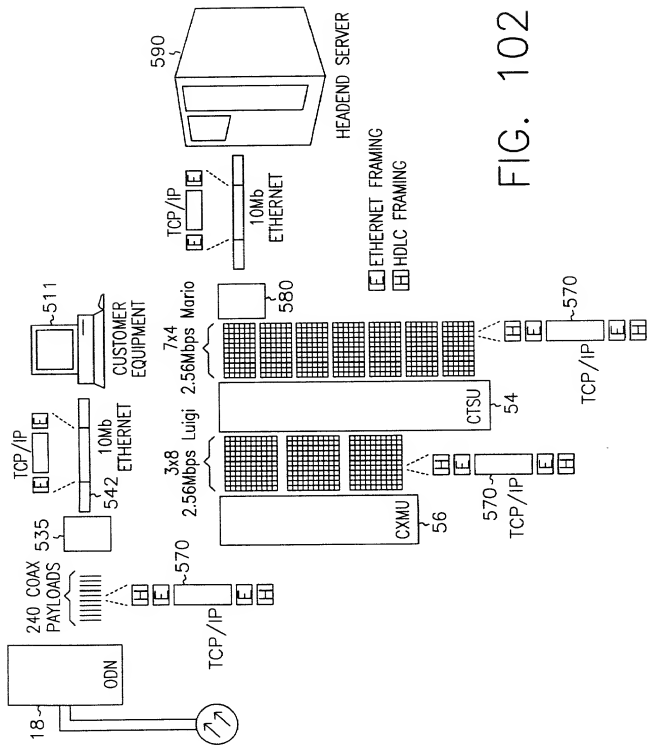


FIG. 102

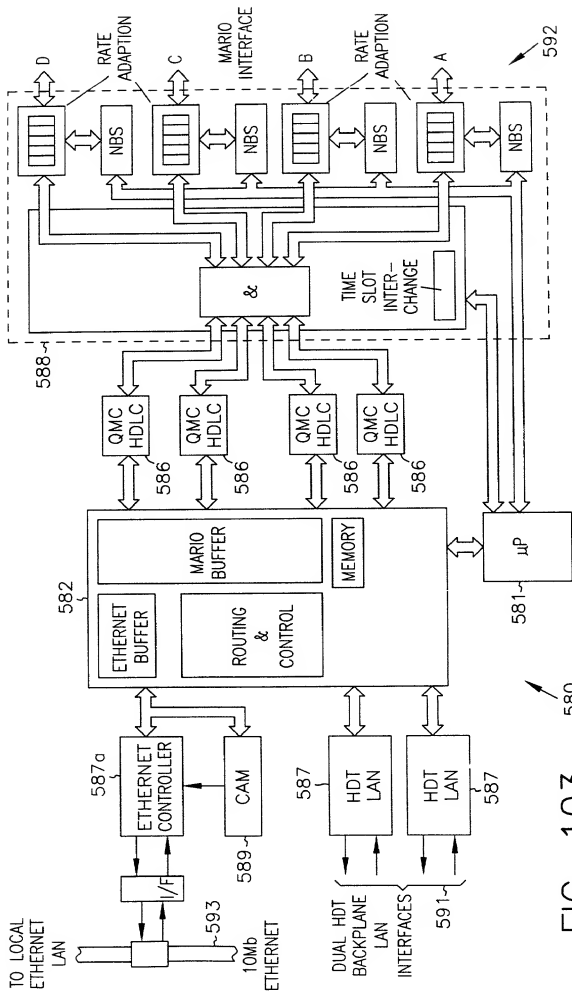


FIG. 103

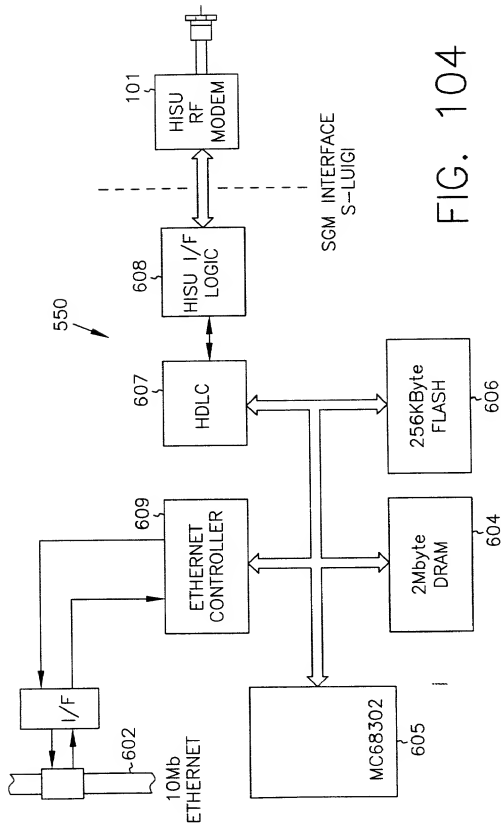


FIG. 104

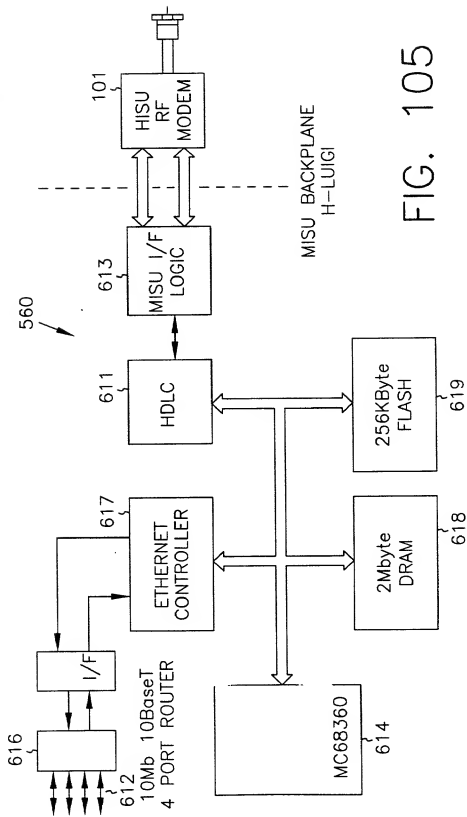


FIG. 105

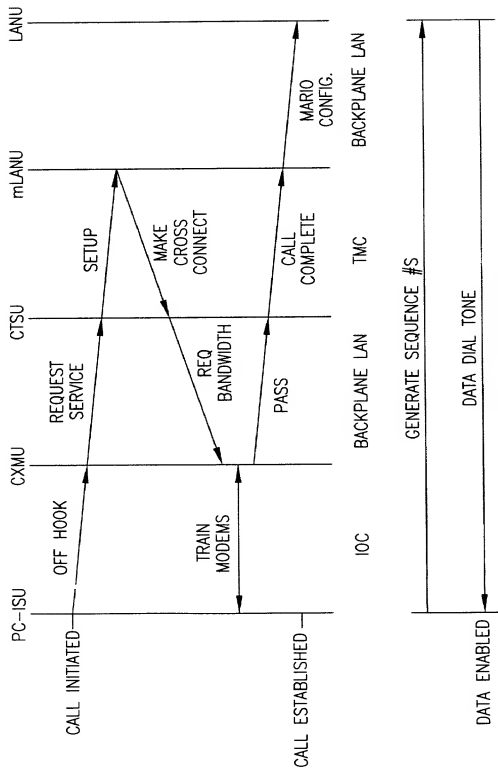


FIG. 106

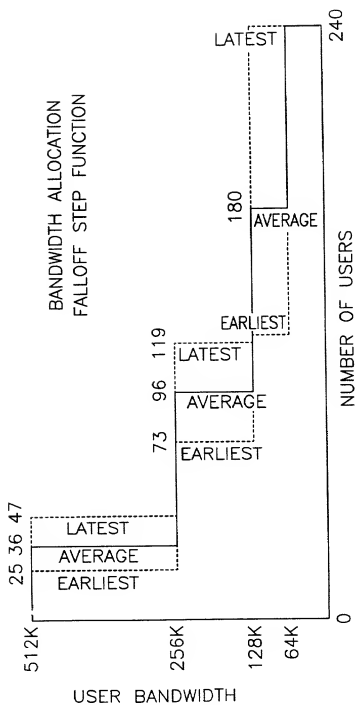


FIG. 107

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

THE RF SPECTRUM OF 24 USERS WITH 512Kbs

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

ADDING THE 25th USER

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

ADDING THE 26th USER, ETC

FIG. 108

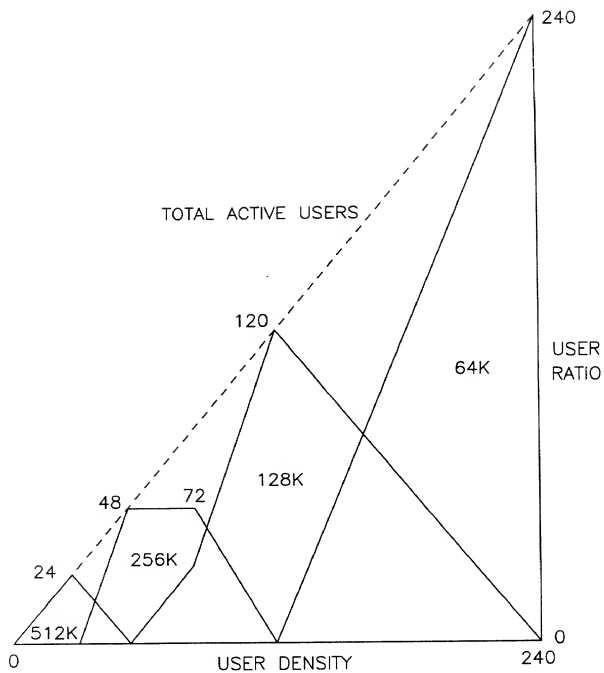


FIG. 109

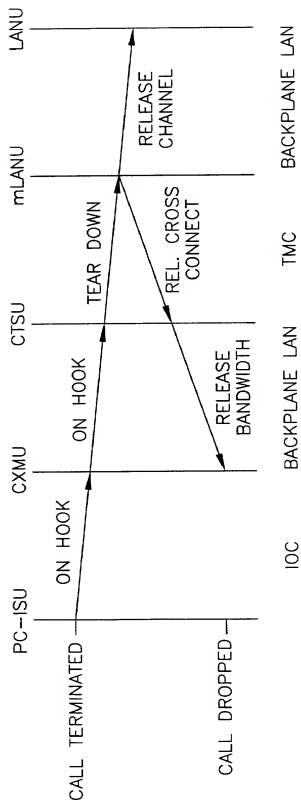
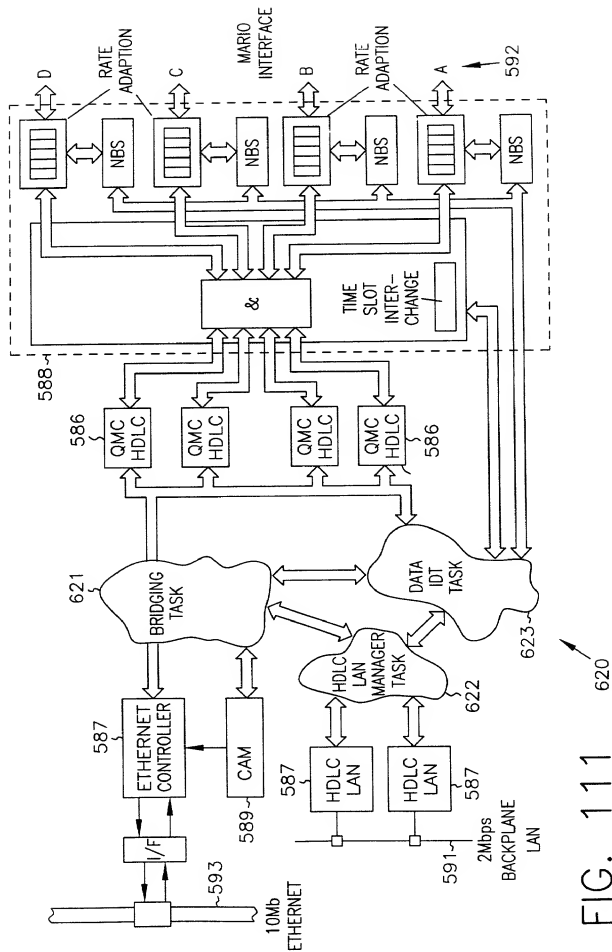


FIG. 110



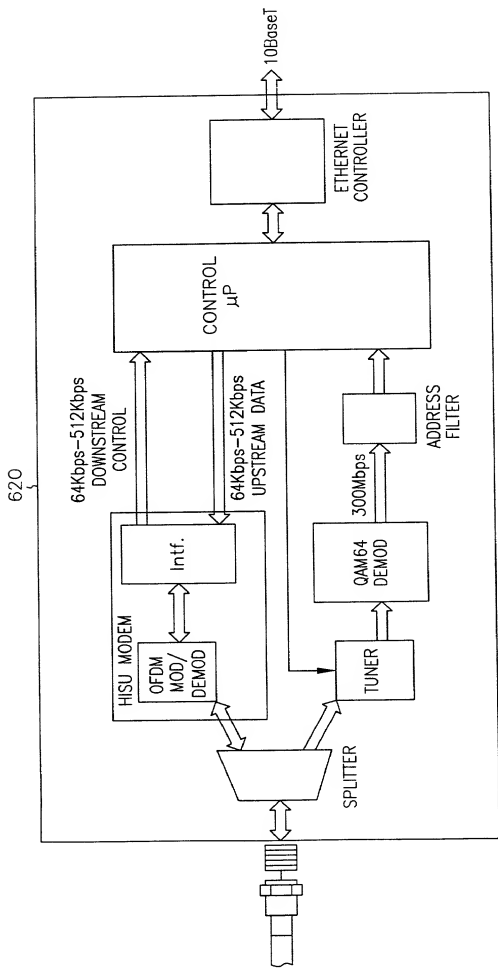


FIG. 112

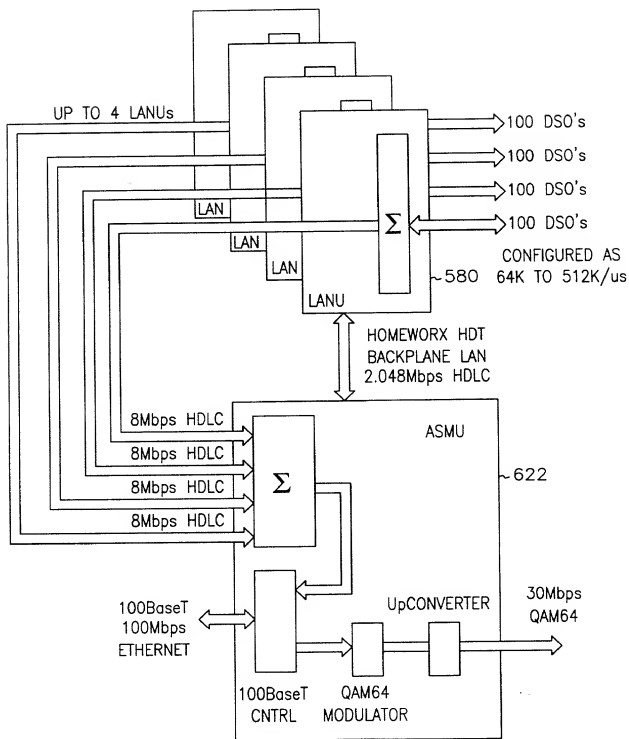


FIG. 113

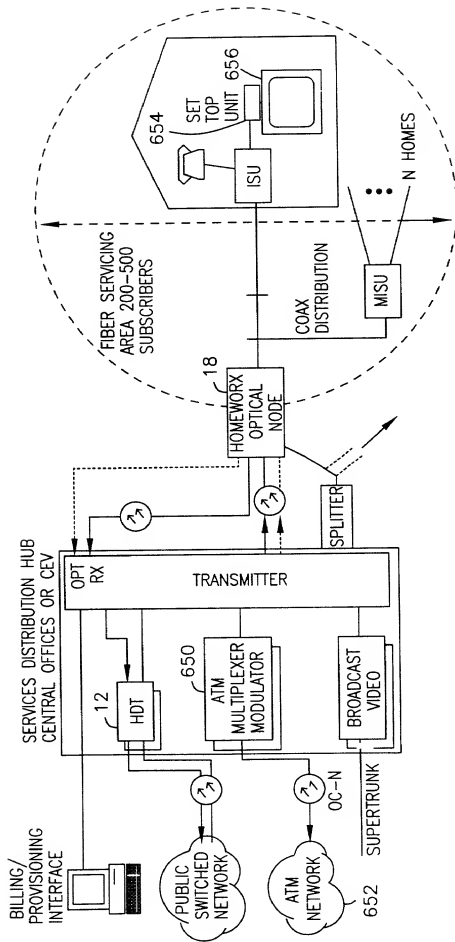


FIG. 114

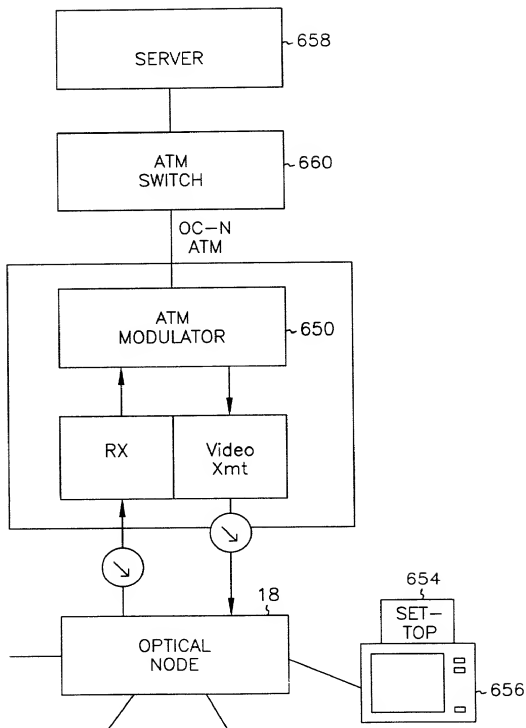


FIG. 115

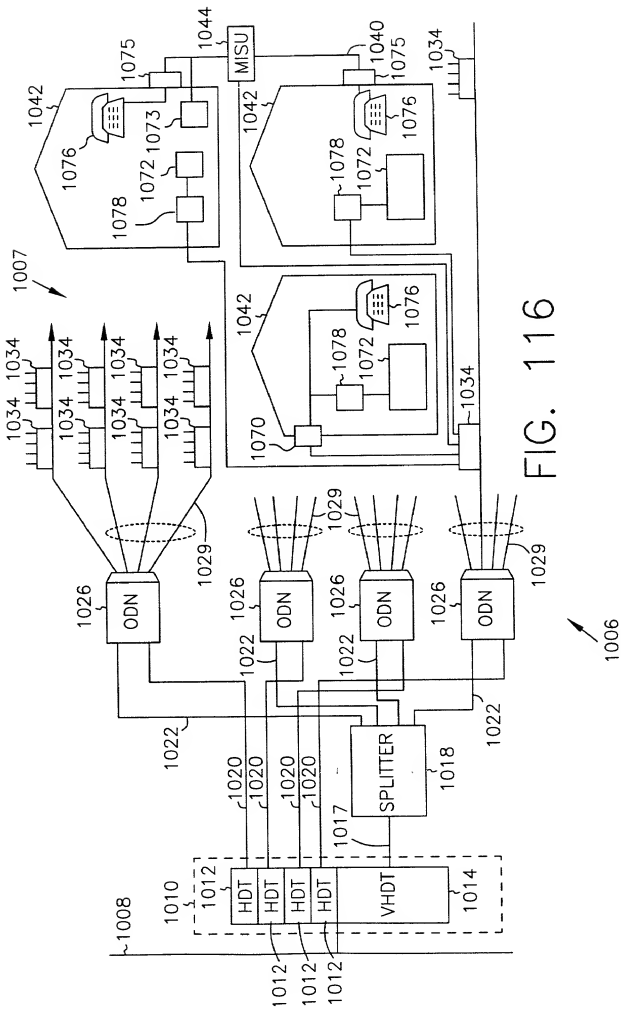


FIG. 116

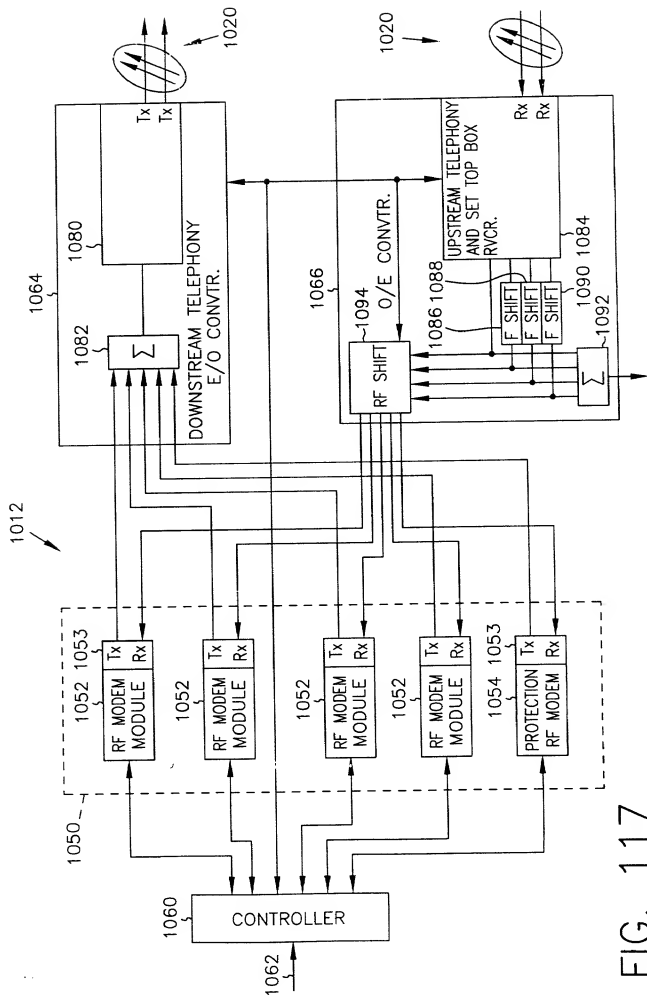


FIG. 117

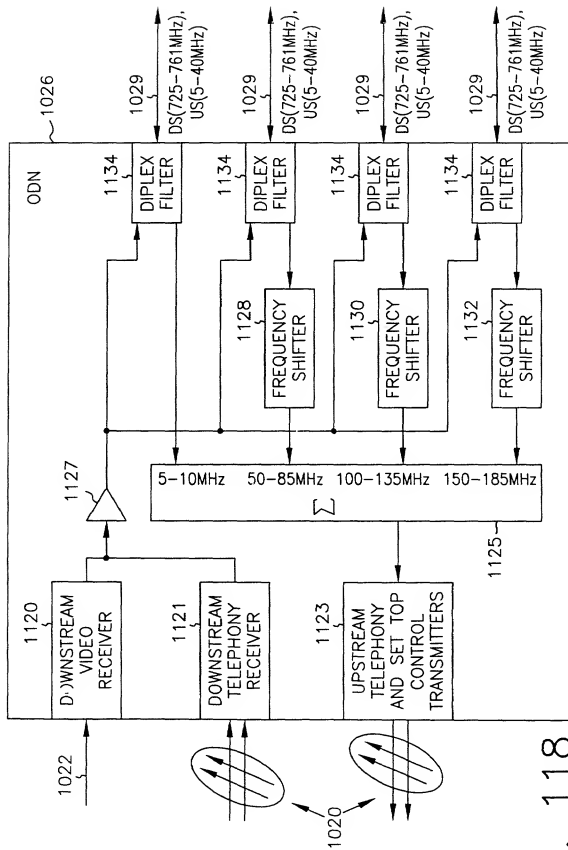


FIG. 118

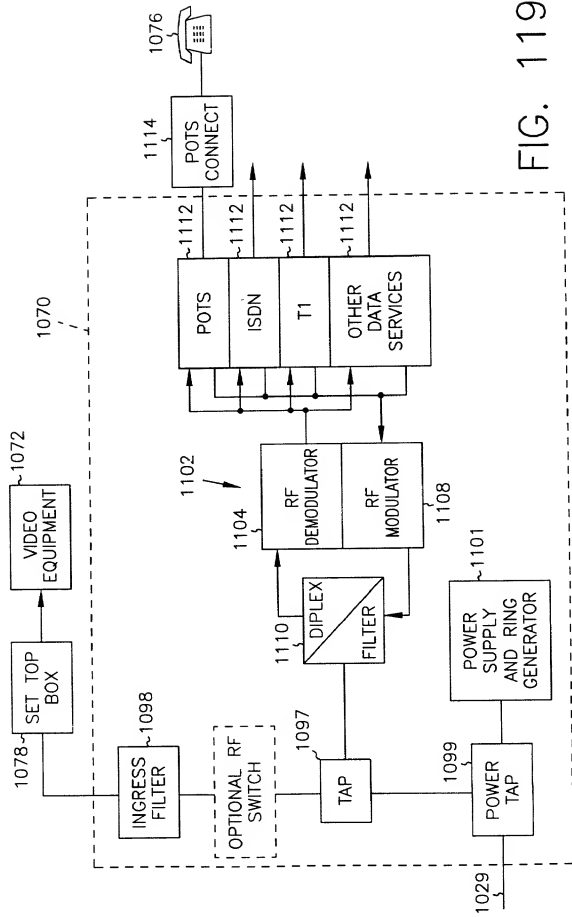


FIG. 119

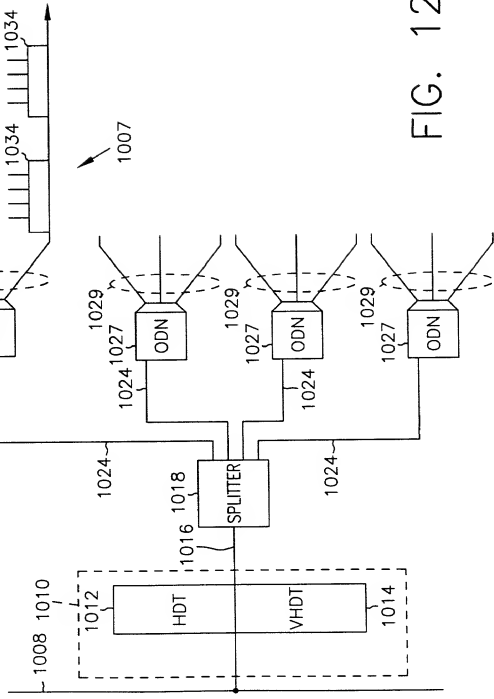


FIG. 120

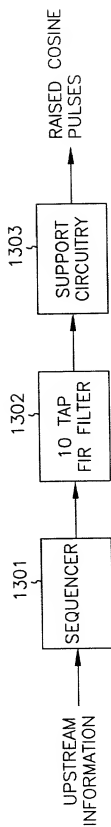


FIG. 121

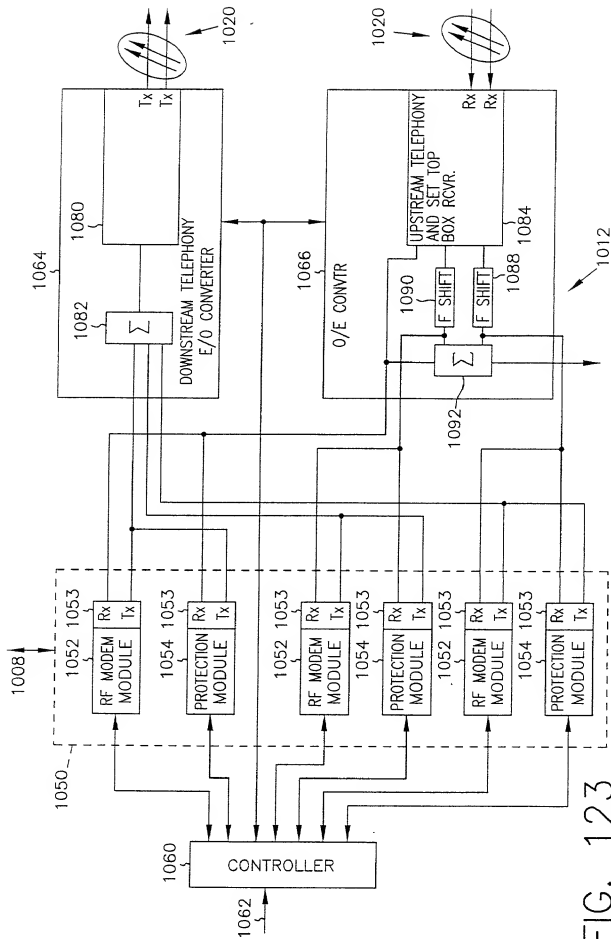


FIG. 123